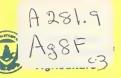
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Economic Research Service

Foreign Agricultural Economic Report 202

World Trade in Fruits and Vegetables

Projections for an Enlarged European Community

Alexander H. Sarris





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Abstract

Enlarging the European Community (EC) to include Greece, Spain, and Portugal will not significantly change the general pattern of world trade in fruits and vegetables, but will lead to larger exports to the EC by the new member countries. EC enlargement will only slightly depress prices of U.S. fruit and vegetable products from their nonenlargement projected levels. World supplies will rise faster than world demand, leading to lower prices on the international market.

Keywords: European Community, Spain, Greece, Portugal, enlargement, fruits, vegetables

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Glossary

The groups of countries discussed in this report, with their members, are identified below:

EC-9—European Community: Belgium, Denmark, Federal Republic of Germany (West Germany), France, Ireland, Italy, Luxembourg, Netherlands, United Kingdom

EC-12—European Community: EC-9 plus Greece, Portugal, and Spain

OWE—Other West European countries: Austria, Finland, Norway, Sweden, Switzerland

SGP-Spain, Greece, and Portugal

EEU—All centrally planned East European countries: Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, Soviet Union, and Yugoslavia

USA—United States of America

CNJP—Canada and Japan

OEX—Other major exporting countries (of fruits and vegetables): Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa

NAME—North African and Middle Eastern countries (with significant trade in fruits and vegetables): Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, Turkey

ACP—African, Caribbean, and Pacific countries with which the EC signed the Lomé Convention Agreement

RSW—All remaining countries of the world

Foreword

The European Community (EC), the largest market for U.S. agricultural exports, is expanding for the second time. This enlargement began when Greece joined the EC on January 1, 1981, and is expected to encompass Spain and Portugal near the mideighties.

The second enlargement appears to be even more significant than the first (which took place in January 1973 when Denmark, Ireland, and the United Kingdom joined the original six members) because it will considerably increase the economic and agricultural diversity of the EC. The second enlargement also will occur during modification of the Common Agricultural Policy (CAP) necessitated by a budget crisis. The expansion of surplus agricultural production in the EC has led to large expenditures under the CAP for surplus disposal. Expenditures are exceeding revenues available to the EC through their own resources provided by the basic treaties. Some modification of the CAP has already occurred.

To assess the implications of EC enlargement and modification of the CAP on U.S. agriculture, the Western Europe Branch, International Economics Division, Economic Research Service (ERS), U.S. Department of Agriculture (USDA), initiated a research program. This program included cooperative efforts between USDA researchers and those at various U.S. universities. Researchers at Stanford University have developed a framework for analysis of probable developments in the CAP, Developments in the Common Agricultural Policy of the European Community, published by ERS as FAER-172. Michigan State University researchers examined Spain's feed-livestock sector, published by ERS as FAER-180. Researchers at the University of California-Berkeley have analyzed the implications of EC enlargement for trade in selected fruits, vegetables, and nuts. This report presents a model for projecting world trade patterns in fresh, dried, and processed fruit, and fresh and processed vegetables and generates preliminary projections of EC imports in 1986. Readers are urged to obtain the companion study carried out at the University of California-FAER-191-for projections based on a detailed analysis of the structural aspects of the EC's trade in oranges, grapes, raisins, almonds, processed peaches, and processed tomatoes. A trade share analysis study of the EC market for U.S. agricultural exports was carried out and published by ERS as FAER-179. For ordering information on these and other related reports, see inside covers.

Reed E. Friend Chief, Western Europe Branch International Economics Division Economic Research Service

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Summary

Enlarging the European Community (EC) to include Greece, Spain, and Portugal will not significantly change the general pattern of world trade in fruits and vegetables, but will lead to larger exports to the EC by the new member countries. EC enlargement will depress only slightly the prices of U.S. fruit and vegetable products from their nonenlargement projected levels. World supplies are expected to rise faster than world demand, leading to lower prices on the international market.

This study employs an empirical analysis of international trade data for five categories of Mediterranean products: fresh fruits, dried fruits, processed fruits, fresh vegetables, and processed vegetables. It estimates world trade models that differentiate products by country or region of origin for each of these product categories. The study uses these analytical models to project future trade patterns under two assumptions: that the EC will enlarge its membership to include Spain, Greece, and Portugal, and that it will not. These two sets of projections are used to isolate effects due solely to enlargement.

Current trends in exports of fruit and vegetable products, combined with forecasts of income growth, point to substantial deterioration in export prices of these products in the next 3-5 years. Dried fruits are an exception. EC enlargement will improve this situation only slightly for most exporters, but substantially for Spain, Greece, and Portugal because of tariff elimination through EC membership.

World trade patterns, as represented by export and import shares, will not change much in the next 3-5 years. EC enlargement will increase the share of Spanish, Greek, and Portuguese exports to the EC at the expense of all other EC suppliers. In absolute terms, however, the declines in other regions' exports to the EC will be much smaller than the increases of these three countries' exports.

EC enlargement will create more trade in fruit and vegetable products within the enlarged EC: about \$400 million yearly in 1977 prices. Trade diversion, by contrast, is estimated at about \$250 million yearly in 1977 prices. The cost of trade diversion will be borne rather uniformly across all EC suppliers except for Spain, Greece, and Portugal.

World Trade in Fruits and Vegetables: Projections for an Enlarged European Community

By Alexander H. Sarris*

Introduction

The European Community (EC) was most recently enlarged on January 1, 1981, when Greece became the 10th nation to join the EC.¹ Spain and Portugal have also applied for full EC membership, and negotiations are underway, with an expected accession near the mideighties. Much of the discussion concerning EC enlargement with these three countries has centered on the possibility that world trade in Mediterranean agricultural products, mainly fruits and vegetables, could thus be disrupted. This report provides a quantitative answer to this issue.

Agriculture and a common policy toward it are among the key bonds holding the EC together (1).² Hence, agriculture has loomed large in the enlargement negotiations with Spain, Greece, and Portugal because the national product depends far more on agriculture in these three countries than in most others of the current EC. Concerns over enlargement have centered principally on the Mediterranean products (mainly fruit, vegetables, wine, and olive oil), as the climate of the three new countries clearly favors production of these crops. It is uncertain whether the protective umbrella of the EC's Common Agricultural Policy (CAP) will induce large excess supplies of these products in the enlarged EC that might adversely affect the producers of similar products in the EC.

Nations outside the EC have had different concerns regarding Mediterranean products. Considered as one market, the EC is the world's largest importer of fruit and vegetable products. Significant suppliers, besides Spain, Greece, and Portugal, have been North Africa, the Middle East, Eastern Europe, the United States, South Africa, Australia, Brazil, Argentina, and Mexico. These countries worry that the CAP, by including the three large EC suppliers of Mediterranean products in the next enlargement, will hurt exports to the EC and, hence, total exports of the remaining suppliers.

This report assesses world trade patterns and estimates both trade creation and diversion in fruit and vegetable products arising after EC enlargement with Spain, Greece, and Portugal (frequently referred to as "the Three' in this report). Trade patterns generally change because of changes in the supply and demand of trading countries and because of changes in trade barriers. EC enlargement is a clear case of a change in trade barriers. The barriers to the EC market facing the exports of the three new entrants will drop to zero. However, exports of the rest of the world to Spain, Greece, and Portugal will face different barriers; namely, those that hold under the current CAP. My objective is to assess changes in trade patterns arising both from changing supply and demand conditions and from changes in commercial policies (such as levels of tariffs). The specific effects on U.S. trade have already been discussed in (23).

The analysis has two dimensions. First, I construct and use closed world trade models for the five aggregate categories of fresh fruits, dried fruits, processed fruits, fresh vegetables, and processed vegetables to assess changes in terms of trade and world trade patterns likely to arise after the next EC enlargement. This approach is impossible at the individual commodity level because sufficiently disaggregated origin/destination trade data are lacking. However, for those fruit and vegetable commodities of interest to the United States, models are built for the EC import trade pattern only, and projections are made of the trade diversion likely to arise as a consequence of the accession of Spain, Greece, and Portugal.

section.

^{*}The author, formerly an assistant professor of agricultural and resource economics at the University of California-Berkeley, is now a professor of economics at the University of Athens, Greece.

¹See the glossary for a listing of the member countries of the EC-9. ²Italicized numbers in parentheses refer to items in the reference

World Trade in Fruit and Vegetable Products and the EC

The EC is the world's most important market for fruit and vegetable products. In 1977, the EC absorbed 54 percent of total world exports of fresh fruit, 47 percent of world exports of dried fruit, 53 percent of world exports of processed fruit, 60 percent of world exports of fresh vegetables, and 52 percent of world exports of processed vegetables.³

Although the EC is the principal market for almost all exporting regions, the United States is a significant exception because it exports the bulk of its fruits and vegetables to Canada and Japan. Trade within the EC accounts for most EC imports in all fruit and vegetable categories, except dried fruit. The EC market is critical to the export of fruit and vegetable products from Spain, Greece, and Portugal, Except for processed vegetables, the EC absorbs more than 50 percent of the Three's exports of these products. However, the Three's exports to the EC never account for more than 24 percent of total EC imports of these products. These statistics bring out the imbalance of accession negotiating power between the EC-9 and the Three regarding these products (7). This imbalance manifested itself during Greek accession negotiations, which concluded with a transition period of 7 years (compared with 5 years for all other agricultural products) for the most sensitive and important Greek fruit and vegetable exports: peaches and tomatoes.

Table 1 summarizes the recent geographical distribution of EC imports of fruit and vegetable products and compares it with the geographical distribution before full enactment of the Common Agricultural Policy (CAP) in 1968. The table shows clearly that trade within the EC has increased significantly at the expense of imports from non-EC member countries. In the processed fruit category, for example, the share of EC imports from within the EC doubled from nearly 20 percent to nearly 40 percent whereas the shares of some other major suppliers of the same commodities to the EC (for instance, the United States, Australia, New

Zealand, and South Africa) drastically fell by about 60 percent.

One hypothesis that may partly explain these trends is the impact of the EC's protective policy on fruit and vegetable products. This explanation is supported by data in table 2 which show the yearly growth rates (in volume terms) in total fruit and vegetable exports of several exporting countries and regions. The growth rate of processed vegetable exports (SITC 055) may illustrate the point best.4 Table 2 indicates that, although the United States, Eastern Europe, a group of six exporters (Australia, New Zealand, South Africa, Mexico, Argentina, and Brazil), and the North African and Middle Eastern countries all exhibited percentage growth in export volume almost as great as or greater than that of the EC, their value share of EC imports dropped significantly during the same period (table 1). Thus, as supply or demand factors cannot account for this drastic shift in shares in the EC imports, the restrictive policies of the CAP would likely have contributed substantially to the result.

Changing Structure of Fruit and Vegetable Production and Consumption

Fruits and vegetables are traded internationally because of both technological and economic considerations. Most fruit and vegetables were traditionally consumed close to where they were grown. Several characteristics made these products difficult to trade, such as seasonal availability, wide price swings, great variability in quality, and high perishability. Until a few years ago and in most parts of the world (even the developed parts), only a small proportion of total produce was processed. However, improved technology is producing varieties that withstand transport better and that are more homogeneous in quality and appearance. Furthermore, grades and standards that facilitate international trade are becoming internationally established.

Consumption patterns are also changing. In the developed countries and notably in the United States and Western Europe, the consumption of processed fruits and vegetables has increased compared with fresh produce. Table 3 data highlight this trend for the United States; however, some partial recent data show

³The tables in appendix A show the matrices of world trade (in value terms) for these five aggregate categories of fruit and vegetable products for nine world regions; the matrices of export shares (derived by dividing the elements in the world trade matrices by their row totals); and the distribution of world imports of fruit and vegetable products by country or region of origin (derived by dividing the elements of the matrices of appendix tables 1-5 by their column totals).

⁴The three-digit Standard Industrial Trade Classification (SITC) code for commodity groups analyzed in this report are as follows: fresh fruit, 051; dried fruit, 052; processed fruit, 053; fresh vegetables, 054; and processed vegetables, 055.

⁵For a cogent argument in favor of this thesis, see (20).

Table 1-Origin of fruit and vegetable imports by the EC·9, value shares, c.i.f. basis

Rest of world		11.7	5.7	17.5 10.4	9.2	24.8
Australia, New Zealand, and South Africa		9.9	15.0 6.6	24.5 9.3	<i>7</i> . 8.	0.5.
North Africa and Middle East ⁴		16.3 13.8	27.4 37.5	8.8	13.9 8.8	6.3
Latin America ³		14.5	8.	2.8	2.3	φ. φ.
United States		3.1	18.3 14.4	11.3	2.9	ა ა ა.ფ.
Eastern Europe and Soviet Union	Percent	<u> </u>	2.2	7.3	6.9 3.1	10.0
Spain, Greece, and Portugal		16.9	29.1 26.7	7.6	13.7	11.2
Other Western Europe		0.2 .3	O. F.	90	4.E.	r. 4.
EC-92		26.3 31.2	6.5	19.7 39.6	48.9 48.8	41.0
Total		100.0	100.0 100.0	100.0	100.0	100.0
Commodity, SITC code, and year		Fresh fruits (051): 1966-67	Dried fruits (052): 1966-67 1977-78	Processed fruits (053): 1966-67 1977-78	Fresh vegetables (054): 1966-67 1977-78	Processed vegetables (055): 1966-67 1977-78

Notes: c.i.f. = cost, insurance, and freight.

SITC = Standard Industrial Trade Classification.

¹May not add to 100 because of rounding.
²France, West Germany, the Netherlands, Belgium, Luxembourg, Italy, United Kingdom, Ireland, and Denmark.
³Mexico, Central America, and South America.
⁴Turkey, Cyprus, Israel, Morocco, Algeria, Tunisia, Egypt, Iran, and Iraq.

Source: (29).

Table 2—Yearly growth rates of fruit and vegetable exports, selected regions and countries, 1966-781

Commodity and SITC code	EC-9	Other Western Europe ²	Spain Greece, and Portugal	Eastern Europe and Soviet Union	United States	Australia, New Zealand, South Africa, Mexico, Argentina, and Brazil	North Africa and Middle East ³
				Percent			
Fresh fruits (051)	3.9	- 2.9	4.0	10.3	6.6	1.6	8.2
Dried fruits	11.1	9.8	4	2.4	5	- 2.4	3.1
(052) Processed fruits (053) Fresh	9.7	16.3	11.7	.1	5.7	18.1	8.0
vegetables (054)	5.4	- 2.3	5.0	- 2.0	5.3	7.0	2.7
Processed vegetables (055)	8.6	5.3	9.9	15.3	8.4	10.3	14.8

¹Growth rates estimated by fitting logarithmic trend lines on the volume of exports of individual countries and then weighting the individual country growth rates by the 1977 value shares in the total exports of each group.

Source: Computed from United Nations trade data.

that trend might be reversing. Scanty data for Western Europe also indicate the same pattern. The increasing demand for convenience foods, which arises as more homemakers become employed and as rising incomes lead to increasing consumption of food away from home, largely explains this shift.

One should view these trends recognizing that production of fruits and vegetables is still labor intensive and, furthermore, that the processing technology is mature and widely available. Thus, developing countries with relatively cheap labor will find it increasingly attractive to produce larger quantities of fruits and vegetables for export to developed countries in both fresh and processed forms.

One must place the next enlargement of the EC in the context of these wider developments. The high protective walls of the EC will probably eventually surround Greece, Spain, and Portugal, whose excess supplies of fruit and vegetable products will likely make the enlarged EC far more self-sufficient and thereby frustrate efforts of other exporters to expand supplies to interna-

tional markets. This phenomenon will adversely affect the international terms of trade in fruit and vegetable products.

Structure of Protection of Fruit and Vegetables in the EC

The system of protection of fruit and vegetable products in the EC has two parts: common customs tariffs (CCT) for imports and internal regulations designed to protect EC producers.

The CAP regulations for the internal EC market in fresh fruit and vegetables are described in the EC Council Regulation No. 1035/72 (9). The regulation sets quality standards for a variety of fresh fruits and vegetables⁶ and another outlines a price and interven-

²All West European countries except EC-9, Spain, Greece, and Portugal.

³Includes Turkey, Cyprus, Israel, Morocco, Algeria, Tunisia, Egypt, Iran, and Iraq.

⁶Fruits are citrus, table grapes, dessert apples, pears, apricots, peaches, cherries, plums, and strawberries. Vegetables are cauliflower, white cabbage, brussels sprouts, spinach, lettuce, chicory, peas, beans, carrots, onions, garlic, asparagus, artichokes, tomatoes, cucumbers, and celery.

tion system for some products.⁷ The regulation defines four prices:

- Basic Price—Equals the arithmetic mean of representative prices in surplus production areas of the EC for the 3 preceding marketing years.
- Withdrawal Price—Set by producer organizations. Price at which the organizations will withhold from the market products supplied by their members.
- Buying-In Price—A fixed percentage (usually 40-70 percent with variation by commodity) of the basic price. When market prices stay below buying-in prices for 3 consecutive days, member states then buy the products of EC origin.
- Reference Price—Equals the arithmetic mean of EC producer prices for the 3 preceding years plus an allowance for marketing costs of products of EC origin.

The first three prices relate to EC production and the reference price relates to imports from non-EC countries. For the product of every EC importing country during the period for which reference prices are applied, the EC calculates an entry price by averaging the lowest prices recorded for the product in all EC markets for which prices are available. The entry price is further adjusted by subtracting transportation costs to the relevant EC import port and the CCT. If this entry price (which is calculated daily) stays 0.50 unit of account below the reference price for 2 consecutive market days, then a levy (countervailing charge) equal to the difference between the reference price and the average entry price of the last 2 days is applied.

This mechanism is clearly designed to keep produce of EC origin competitive with imports from third countries. Sampson and Yeats have estimated that, in 1974, the tariff equivalent of these levies for fruits and vegetables was 37.1 percent, which was substantially higher than their estimated average nominal CCT of 16.4 percent (27).

The organization of the EC market in processed fruits and vegetables is outlined in Council Regulation No. 516/77 (9). There are two basic mechanisms of import control besides that of the CCT. The first mechanism is a levy based on the sugar content of the produce and the difference between the threshold (analogous to reference) and import prices of sugar. The second mechanism is minimum import and floor prices which are introduced for some products at the discretion of the EC Commission. Sampson and Yeats estimated a nominal tariff equivalent of EC levies of processed fruits and vegetables of 26.8 percent in 1974 compared with an average CCT of 26 percent (27).

The CCT's are complicated. They vary by year and by season for each product. They are generally higher during EC production periods and lower in off-season periods. Furthermore, the tariffs discriminate among countries of origin because the EC has signed agreements with several Mediterranean and other developing countries. Table 4 estimates the various CCT average tariff rates of the EC on fruit and vegetable imports. The average tariff rates on EC imports from Greece are low whereas the tariffs on imports from Spain are relatively high. Spanish accession with the attendant dismantling of these tariffs will obviously be the major source of any change in trade patterns in fruit and vegetable products.

Previous Literature on EC Enlargement and the Fruit and Vegetable Trade

The international trade in fruit and vegetable products occupied only a minor part of the agricultural economics literature prior to consideration of a second EC enlargement.

A World Bank study by Hunt, empirically estimating growth of supply and demand and prices of fruit and vegetable products, focused on trade in 36 fruit and vegetable products between Mediterranean countries and EC members (18). The study projected production by trend extrapolation and demand by linear functions of per capita income. Trade patterns (namely, export and import market shares) were assumed unchanged. Hunt brought projected excess supplies to zero by adjusting international prices to clear each import market. He concluded that, for most fresh fruit and vegetable products, the EC import market will not be able to absorb the growing export surpluses of North Africa and the Middle East for the next 15 years. Hunt projected price declines for about two-thirds of the commodities considered. He analyzed neither processed and dried fruits nor processed vegetables.

⁷Products covered by the price and intervention system are cauliflower, tomatoes, sweet oranges, mandarins, lemons, table grapes, apples (other than cider apples), pears (other than perry pears), and peaches (excluding nectarines).

⁸Reference prices are applied on a seasonal basis to cucumbers, tomatoes, apples, cherries, grapes, lemons, mandarins, peaches, pears, and oranges.

Table 3—Per capita consumption of fresh and processed fruits and vegetables in the United States, selected years

V		Fruits			Vegetables	
Year	Fresh	Processed	Total ¹	Fresh	Processed	Total ¹
			Pounds p	oer capita		
1950 1960 1965 1970 1975 1980 1981 1982	108.6 93.4 81.1 80.1 84.9 89.8 86.8 85.7	81.1 102.1 93.3 126.3 142.3 135.5 135.3 129.4	189.7 195.5 174.4 206.4 227.2 225.3 222.1 215.1	115.2 105.7 98.3 99.1 98.0 107.9 104.9 109.4	84.0 96.6 102.7 114.6 120.3 110.0 110.0	199.2 202.3 201.0 213.1 218.3 217.1 214.8 220.9
			Shares	(percent)	•	
1950 1960 1965 1970 1975 1980 1981 1982	57.2 47.8 46.5 38.8 37.4 39.9 39.1 39.8	42.8 52.2 53.5 61.2 62.6 60.1 60.9 60.2	100 100 100 100 100 100 100 100	57.8 52.2 48.9 46.5 44.9 49.7 48.8 49.5	42.2 47.8 51.1 53.8 55.1 50.7 51.2 50.4	100 100 100 100 100 100 100

¹Some totals may not add because of rounding.

The Food and Agriculture Organization (FAO) of the United Nations, in its 1979-80 Commodity Review and Outlook, included a chapter on commodity trade implications of EC enlargement in which the authors point out that the enlarged EC will be much more self-sufficient in fruit and vegetable products than it was before enlargement (10). There may be some trade diversion of third-country exports to the EC due to CAP preferences toward the Three. The study does not, however, make any attempt at estimating these effects.

Several other authors (for example, Hormann (16) and Hinton (15)) have made the same point about increasing the self-sufficiency of the enlarged EC in fruit and vegetables. This point, however, which is usually made by simple division of the total quantity of a product produced within a given geographic area by the total quantity consumed (after trade external to the area has been netted out) does not indicate any direction of change in the overall trends of production, consumption, or trade.

Other studies have been of an institutional nature (for example, Montigaud and Lalfert (22) and Montigaud and Lauret (21)) and have examined the potential changes in EC policies and institutions for fruit and vegetable products. One of the points frequently made in such studies is that producer organizations in Spain,

Sources: 1950-65, (24, 25); 1970-82, (30, 31).

Greece, and Portugal are at an infantile stage, compared with the French and Italian ones. Hence, the pressures on the current CAP for changes favoring fruit and vegetable producers, albeit larger than current pressures, will still be small in an enlarged EC compared with pressures exerted by producers of temperate and northern products (primarily cereals and livestock products). In other words, there will be no substantive change in the current political constituency of the CAP.

Three studies by Agra Europe examine the agricultural implications of EC enlargement with Spain, Greece, and Portugal (1, 2, 3). All three studies devote considerable attention to the fruit and vegetable sectors, pointing out products which could burden the CAP: peaches, tomatoes, and tomato paste for Greece; citrus, apples, peaches, nuts, and tomatoes for Spain; and processed tomatoes for Portugal. These studies, however, do not go much beyond identifying potential problem areas.

Thus, the impact of EC enlargement on trade in fruit and vegetable products seems to be an area of speculation with few hard numbers to support the arguments. The most frequent claim is that some trade diversion of exports of third countries from the EC to other areas of the world poses a threat.

Table 4—Weighted tariff rates on EC imports of fruit and vegetable products from countries with which EC has a preferential arrangement, 1974 and 1978

		Cor	nmodity, SITC	code, and year		
Country	Fresh fruit (051)			fruit 52)	Processed fruit (053)	
	1974	1978	1974	1978	1974	1978
			Per	cent		
Spain Greece Portugal Morocco	12.08 2.12 6.83 5.38	11.74 0 7.85 3.41	6.00 .59 —	7.98 0 16.00	21.26 2.25 — 21.01	19.91 .50 — 10.30
Algeria Tunisia Egypt Turkey	10.98 6.90 9.68 4.08	1.13 4.96 4.96 2.70	 6.67	_ _ _	27.25 18.90 18.90 15.69	5.70 10.00 10.00 8.51
Cyprus Israel ACP ¹ Rest of world ²	8.10 8.08 16.56 16.40	7.47 4.42 .04	_ _ _	= =	20.42 20.42 23.02 26.00	19.70 7.90 0

		Commodity, SITC cod	de, and year	
		getables 54)		vegetables 55)
	1974	1978	1974	1978
		Percent	•	
Spain Greece Portugal Morocco	10.81 1.30 7.78 9.80	9.76 .50 14.33 6.75	14.94 1.84 17.96 12.97	14.16 .50 12.46 3.46
Algeria Tunisia Egypt Turkey	7.45 10.52 11.92 3.69	12.96 8.56 10.96 2.78	20.00 14.79 14.91 14.73	0 5.39 15.17 11.30
Cyprus Israel ACP ¹ Rest of world ²	16.67 10.23 3.23 16.40	17.08 10.86 0	17.44 12.59 26.00	22.00 15.57 0

⁻⁻ = NiI or negligible.

¹Includes the African, Caribbean, and Pacific countries with which the EC signed the Lomé Convention Agreement.

²Tariff rates for world exports to EC as computed by Sampson and Yeats (27). Given the preferential tariff rates, these probably underestimate the average tariffs facing the exports to the EC of countries other than the ones mentioned above.

Model for Projecting Trade Patterns

In this section, I develop a general methodology for projecting trade patterns based on the assumption that each country's exports of a particular product or product category have unique characteristics distinguishing them from similar products of other exporters. This assumption is easy to rationalize for fruit and vegetable products. Each fruit or vegetable product exported by a country carries unique characteristics. For example, there are several varieties of oranges, and each country has soil and climatic conditions favoring the production of only a few varieties. Furthermore, production seasons are highly variable among different regions and yield products at different times of the year. When we aggregate across several products, the assumption of the uniqueness of each country's exports is even more justified because the product mix in each country's exports is different.

The model outlined below originated in the seminal paper by Armington (5). Armington showed how one can use the assumption of separability to derive functions that relate a particular trade flow between two countries to an importing country's index of total imports and the ratio between the cost, insurance, and freight (c.i.f.) price of the exporting country and an index of the import prices of all goods of the same type coming from different origins.

Trade models using variants of this approach have been constructed by Armington (4), Branson (8), Artus and Rhomberg (6), Hickman (13), Grennes, Johnson, and Thursby (12), and others. The model outlined here is an extension of the model used by Grennes, Johnson, and Thursby.

Assume there are r exporting countries and n importing ones for a particular product. The following notation will be used throughout:

x_{ik} = Quantity of exports of the product of the ith exporting country to the kth importing country (in the base period). Because prices are normalized to 1 in the base period, this quantity will be measured by the value of the trade flow between the two countries.⁹

- p_i^e = Internal export price of the ith exporting country (excludes all export subsidies or taxes). This element is normalized to 1 in the base period.
- p_{ik} = Landed price of imports of importing country k from exporting country i (includes all duties paid at port of entry). This element is also assumed to be equal to 1 in the base period.
- a_{ik} = Differential between the price of the product x_{ik} inside importing country k and the internal export price of the product in exporting country i. This element is normalized to l in the base period.
- x_i = Total quantity of exports of the product from country i.

The export and import prices defined here are not freeon-board (f.o.b.) or c.i.f. prices. They are prices internal to each country and, hence, prices observable by the producers and consumers of the exportable commodities. In other words, the parameter a_{ik} is understood as one that excludes all export taxes or subsidies, but includes all import tariffs. Given the above definitions, the following relations hold:

$$p_{ik}^m = p_i^e \cdot a_{ik}$$
 $i = 1, ..., r; k = 1, ..., n$ (1)

$$x_i = \sum_{k=1}^{n} x_{ik}$$
 $i = 1, ..., r$ (2)

Notice that implicit in relation (2) is the assumption that each exporting country exports a homogeneous product, albeit different from the product of another exporting country. Given this assumption, x_i is well-defined and represents the aggregate quantity of exports of country i to all destinations. Notice that the

number $\sum_{i=1}^{n} x_{ik}$ of sums of quantities of imports from

different origins into the kth importing country does not represent anything tangible (that is, the quantity of some well-defined commodity) as each x_{ik} is by assumption a different product because it originates in different countries.

⁹The base period can be thought of as any year for which a trade pattern is known and which is used as a benchmark for projections. Time subscripts will be suppressed throughout to simplify notations as everything will refer to the base period and changes from it.

A quantity index of aggregate imports of the product into country k is defined by the following C.E.S. (constant elasticity of substitution) function:

$$\mathbf{m}_{k} = \left[\sum_{i=1}^{r} \beta_{ik} \mathbf{x}_{ik}^{-i_{k}-1}\right]^{\frac{r_{k}}{r_{k}-1}} \qquad k = 1, ..., n$$
 (3)

In equation (3), σ_k is the constant absolute value of the elasticity of substitution among the products of different exporting countries in the demand of country k, and $\beta_{ik} \ge 0$ (i = 1, ..., r; k = 1, ..., n). We employ a C.E.S. index because it is analytically convenient.

Assume that the utility of the consumers of country k can be written as:

$$U_k (m_k, z_{1k}, z_{2k}, ..., z_{qk})$$
 (4)

where z_{ik} (i = 1, ..., q) are quantity indexes of other classes of products (such as other imports and various classes of domestic products).¹⁰

For the above model, Armington (5) has shown that the aggregate demand for m₁ can be written as follows:

$$m_i = f_i(Y_1, p_i^m, p_i^t, ..., p_i^q)$$
 (5)

where p_k^m denotes a price index corresponding to m_k , p_k^t (j = 1, ..., q) denotes price indexes corresponding to the quantity indexes of the other consumed products, and

$$Y_{k} = p_{k}^{m} m_{k} + \sum_{j=1}^{q} p_{k}^{j} z_{jk}$$
 (6)

denotes the aggregate expenditure of the consumers of country k.

From specifications (3) to (6), Armington derived the demand of country k for product x_{ik} as follows:

$$\mathbf{x}_{ik} = \beta_{ik}^{\sigma_k} \, \mathbf{m}_k \, \left(\frac{\mathbf{p}_{ik}^{m}}{\mathbf{p}_{i}^{m}} \right)^{-\sigma_k} \tag{7}$$

where the price index p_k^m represents the "price of aggregate imports" of the product in country k from all origins and is given by the expression:

$$\mathbf{p}_{k}^{m} = \left[\sum_{i=1}^{r} \beta_{ik}^{a_{k}} (\mathbf{p}_{ik}^{m})^{1-a_{k}} \right]^{1-a_{k}}$$
 (8)

Given the magnitudes of x_i (i=1,...,r), m_k (k=1,...,n), a_{ik} (i=1,...,r; k=1,...,n), and the values of the parameters β_{ik} (i=1,...,r; k=1,...,n), and σ_{i} (k=1,...,n), one can use equations (1), (2), (7), and (8) to solve for the r export prices p_i^c (i=1,...,r). Then, using (7), one can solve for the rn trade flows x_{ik} (i=1,...,r; k=1,...,n). This procedure would generally involve finding the solution to a system of r excess demand functions for which a general equilibrium computational algorithm would have to be used.

Analysts will generally be interested in changes in trade patterns arising out of changes in various exogenous variables, such as income and export supplies, or out of changes of policies which can be represented as changes in a_{ik}. To a first order, these changes from the base period equilibrium can be approximated as the solution to a system of linear equations.

Denoted by \widetilde{w} , the percentage change (or log derivative) of a variable w from its base period value is:

$$\widetilde{\mathbf{w}} \equiv \mathrm{d} \log \mathbf{w} = \frac{\mathrm{d} \mathbf{w}}{\mathbf{w}_{\mathrm{o}}} \approx \frac{\mathbf{w} - \mathbf{w}_{\mathrm{o}}}{\mathbf{w}_{\mathrm{o}}}$$
 (9)

where the base period is denoted by a subscript zero.

Armington (5) showed that the changes in trade flows can be derived from equations (7) and (8) and are given by the following relations:

$$\widetilde{\mathbf{x}}_{ik} = \widetilde{\mathbf{m}}_{k} - \sigma_{k} (1 - \mathbf{S}_{ik0}) \widetilde{\mathbf{p}}_{ik}^{m} + \sum_{i=1 \atop j \neq k}^{i} \sigma_{k} \mathbf{S}_{ikj0} \widetilde{\mathbf{p}}_{ik}^{m}$$
 (10)

$$i = 1, ..., r;$$
 $k = 1, ..., n$

In equation (10), the $S_{iko}(i=1,...,r,k-1,...,n)$ is the base-period value shares of imports of the product in the kth market, originating in the ith exporting region:

$$S_{ikn} = \frac{p_{ikn}^{m} \cdot x_{ikn}}{\sum_{i=1}^{n} p_{ikn}^{m} x_{ik}}$$

$$i = 1, ..., r; \qquad k = 1, ..., n$$
(11)

 $^{^{10}}$ Starting from a utility over all consumed products of the form U_k ($m_k^1, ..., m_k^{Pm}, Z_{1k}^1, ..., Z_{1k}^{Pr}, ..., Z_{qk}^{Pq}, ..., Z_{qk}^{Pq}$), a condition that is sufficient for this utility to be collapsed into a utility of equation (4) is the one of want independence among products in different classes (5)

The next step is to specify enough additional equations so as to render the system solvable. Log-differentiating equations (1) and (2) obtains the following linear equations in percentage changes:

$$\tilde{p}_{ik}^{m} = \tilde{p}_{i}^{c} + \tilde{a}_{ik}$$
 $i = 1, ..., r; k = 1, ..., n$ (12)

$$\widetilde{x}_{i} = \sum_{k=1}^{n} H_{iko} \widetilde{x}_{ik} \quad i = 1, ..., r$$
 (13)

In equation (13), the H_{iko} is the base-period quantity shares of exports of the product from the ith exporting region to the kth market:

$$H_{iko} = \frac{X_{iko}}{\sum_{i=1}^{n} X_{ijo}}$$
 $i = 1, ..., r; k = 1, ..., n$ (14)

Equations (10), (12), and (13) can be used to solve for the endogenous variables \widetilde{p}_i^e and \widetilde{x}_{ik} , given \widetilde{m}_k : (k = 1, ..., n), $\widetilde{x}_i(i = 1, ..., r)$, and $\widetilde{a}_{ik}(i = 1, ..., r; k = 1, ..., n)$. The latter represent the changes in total import demands, export supplies, and trade policies, respectively. I take the analysis a step further by specifying the import demand and export supply changes in more detail.

First, I assume that all prices are expressed in real terms. This assumption allows writing the import demand function (5) as follows:

$$m_k = f_k(Y_k, p_k^m) \tag{15}$$

Where Y_k is now real expenditure and p_k^m is the index in equation (8) where all prices are understood as having been deflated by country k's consumer price index. From equation (15), the percentage change in quantity of imports demanded can be written as follows:

$$\widetilde{\mathbf{m}}_{k} = \theta_{k} \widetilde{\mathbf{Y}}_{k} - \epsilon_{k} \widetilde{\mathbf{p}}_{k}^{m}$$
 (16)

In equation (16), θ_k and ϵ_k are the expenditure elasticity and absolute value of the price elasticity of the demand by country k for aggregate imports of the product in question. From equation (7), the base-period import value shares S_{iko} can be written as follows:

$$S_{iko} = \beta_{ik}^{\sigma_k} \left(\frac{p_{iko}^m}{p_{ko}^m} \right)^{1-\sigma_k} = \beta_{ik}^{\sigma_k}$$
 (17)

$$i = 1, ..., r; k = 1, ..., n$$

This equation follows from the convention that baseyear prices are equal to 1. Using equation (8) and (17), one can write the percentage change in the import price index p_{ν}^{m} as:

$$\widetilde{p}_{k}^{m} = \sum_{i=1}^{r} S_{iko} \widetilde{p}_{ik}^{m} \quad k = 1, ..., n$$
 (18)

The assumption is also made that the export supply of ith exporting region is given by a relation of the type:

$$X_i = A_i(p_i^e)^{n_i}e^{\phi_i t} \quad i = 1, ..., r$$
 (19)

where η_i is the ith exporting region's price elasticity of export supply and ϕ_i is a constant trend. From equation (19), we can derive the following expression:

$$\widetilde{\mathbf{x}}_{i} = \eta_{i} \, \widetilde{\mathbf{p}}_{i}^{c} + \phi_{i} \triangle \mathbf{t}$$
 (20)

By combining equation (10), (12), (13), (16), (18), and (20), we can obtain the following system of linear equations:

$$\widetilde{X}_{ik} = \theta_k \widetilde{Y}_k - \sigma_k \widetilde{p}_{ik}^m + \sum_{j=1}^r S_{jko}(\sigma_k - \epsilon_k) \widetilde{p}_{jk}^m$$

$$i = 1, ..., r; \quad k = 1, ..., n$$
(21)

$$\widetilde{p}_{ik}^{m} \ = \ \widetilde{p}_{i}^{e} \ + \ \widetilde{a}_{ik} \quad i \ = \ 1, \ ..., \ r; \ k \ = \ 1, \ ..., \ n \eqno(22)$$

$$\eta_i \widetilde{\mathbf{p}}_i^{\mathbf{e}} + \phi_i \triangle \mathbf{t} = \sum_{k=1}^n \mathbf{H}_{iko} \widetilde{\mathbf{x}}_{ik} \quad i = 1, ..., r$$
(23)

In the above system, the r equations (23) represent the market-clearing equilibrium conditions which, given equations (21) and (22), can be solved and yield the percentage changes in export prices and then successively, via equations (21) and (22), the percentage changes in trade flows.

The exogenous variables are the real expenditure changes in the importing countries (\widetilde{Y}_i) , the trade policy changes (\widetilde{a}_{ik}) , and the assumed growth rates of export supplies (ϕ_i) . Notice that the solution of the system is straightforward because it involves r linear equations in r unknowns.

Because the equilibrium model is nonlinear, the linearized projections are valid only for small departures from equilibrium. Because the projections spanned a period of 9 years which produced rather large departures from the base equilibrium, the time interval for the projections was first split into several equal, smaller subintervals. For each subinterval, I then

made a linearized projection (as described above), using the quantities, prices, and shares computed from the previous interval's projection as a base. This procedure of successive linearizations produced a much closer approximation to the new equilibrium than a one-shot linearized projection which is the method used in all previous models of this type.

The model, as outlined in equations (21) to (23), can be used to answer the following two questions.

- 1. Given that trade policies are unchanged ($\tilde{a}_{ik} = 0$, i = 1, ..., r; k = 1, ..., n), what are the projected changes in trade patterns and real export prices (terms of trade) that could arise from various assumptions about real income and export supply changes in the trading countries?
- 2. What are the static trade effects of various changes in trade policies (namely, assume $\widetilde{Y}_k = 0$ and $\phi_1 = 0$, i = 1, ..., r; k = 1, ..., n)?

One can, of course, ask various combinations of the above questions.

Empirical Specification of the Aggregate World Trade Models

In this section, I present the methodology used in estimating the parameters needed for the trade model outlined in the previous section. At the outset, I decided to confine the analysis of world trade patterns to the five three-digit SITC categories—fresh fruits, dried fruits, processed fruits, fresh vegetables, and processed vegetables (SITC categories 051, 052, 053, 054, and 055, respectively). This decision was reached because the major objective was to obtain a complete picture of the effects of EC enlargement on world fruit and vegetable trade and prices. A finer disaggregation would have been extremely time consuming because it would have necessitated the construction of world models for scores of individual products for which origin-destination trade data are unavailable. Some more restrictive disaggregated individual commodity trade models are described later.

Making the model operational requires a substantial number of parameters. First, one needs a complete trade matrix in value terms for the base period.¹¹ This

matrix is used to compute the parameters H_{iko} , S_{ilo} (i=1,...,r; k=1,...,n). Then, one needs r parameters $\eta_i(i=1,...,r)$, the export price elasticities and 3n parameters θ_k , ϵ_k , σ_k (k=1,...,n), the expenditure, price, and the substitution elasticities of import demands, respectively.

Trade Matrices

The trade data used throughout the study are the United Nations (U.N.) Commodity Trade Statistics which are available on tapes from the U.N. Statistical Office. The version of the U.N. tapes used here was provided by the U.S. Department of Agriculture's Economic Research Service. These tapes provide data for every reporting country, at the three-, four-, and five-digit SITC codes on the yearly quantities and values of imports and exports by origin and destination.

For the analysis, the world was divided into nine regions considered to represent the trade patterns of fruit and vegetable products. The acronyms used and the countries included in each region are indicated in the glossary. The U.N. country data were aggregated into trade matrices for the base year and for every commodity. Two value matrices were obtained for every commodity; one was constructed from exportdestination data and the other from import-origin data. In other words, one matrix includes the flows as reported in export statistics, whereas the other includes the flows as reported in import statistics. Both of these matrices ideally should be the same. For several reasons, these matrices usually differ. One has to do with the lag between the time a shipment leaves the port of origin (and is recorded as an export) and the time it arrives in the port of entry (and is recorded as an import). This is the familiar "leads and lags" problem in trade statistics. Another reason is that some countries included in a region keep or report less complete statistics than do others. This problem is particularly serious for Eastern Europe and some developing countries. Therefore, the two matrices thus constructed were compared and the larger of each of the bilateral flows was assumed to represent that year's trade flow. Transshipments—namely, the misclassification of transitory quantities of a product with the ultimate destination as a third country but recorded as imports of the intermediate country—were not a problem as the data for most of the relevant countries were reported net of re-exports. Transshipments for some of the countries were classified as Rest of World (RSW) and may have affected the figures for RSW trade. However, given that all the RSW flows were constructed from data of partner countries (because most RSW countries did not

 $^{^{11}} The base-period trade matrix must be in value terms because, by making the convention that all base-year equilibrium prices are equal to 1, we can treat all flows as quantity flows. The base-year shares <math display="inline">\boldsymbol{H}_{iko}, \boldsymbol{S}_{iko}$ (i = 1, ..., r; k = 1, ..., n) can then be obtained from this matrix.

report trade flows by origin and destination), errors were minimized. The resulting trade matrices and the associated export and import shares appear in appendix A.

Estimates of the Elasticities of Substitution

The methodology used for empirically estimating the parameters σ_k follows most closely that used by Hickman and Lau (14) and is a slightly more general version of the Armington model outlined earlier.

Consider the ith country which imports the commodity in question from r exporting countries. Assume that the quantity index of imports of the product is given in period t by:

$$\mathbf{m}_{t} = \left[\sum_{j=1}^{r} \beta_{j} e^{\gamma_{j} t} \mathbf{x}_{it} \frac{\sigma - 1}{\sigma} \right]^{\frac{\sigma}{\sigma - 1}}$$
(24)

Equation (24) is a slightly more general version of equation (3) because of the inclusion of the trend terms; otherwise, all other variables retain the same meaning as already described. Throughout this subsection, the discussion will focus on a given importing country so the subscript k used earlier will be eliminated for simplicity of notation.

Using the separability assumption already introduced and following the analysis of Armington or Hickman and Lau, we can see that the demand for imports from origin i is given by a relationship quite similar to equation (7):

$$X_{it} = \beta_i^{\sigma} e^{\gamma_i \sigma t} m_t \left(\frac{p_{it}^m}{p_t^m} \right)^{-\sigma}$$
 (25)

where p_t^m is given by an expression similar to equation (8):

$$p_{t}^{m} = \left[\sum_{i=1}^{r} \beta_{i}^{\sigma} e^{\gamma_{i} \sigma t} (p_{it}^{m})^{1-\sigma} \right]^{\frac{1}{1-\sigma}}$$
 (26)

Consider now changes in value shares in year t from some initial year denoted by t_o . Log differentiating the value shares $S_{it} = (p_{it}^m x_{it})/(p_t^m m_t)$ and denoting the percentage change as before by a tilde (\sim), yield the equation:

$$\widetilde{S}_{it} = \widetilde{p}_{it}^{m} + \widetilde{x}_{it} - \widetilde{p}_{t}^{m} - \widetilde{m}_{t}$$
(27)

Log differentiating equation (25) yields:

$$\widetilde{X}_{i,t} = \widetilde{m}_{i,t} - \sigma(\widetilde{p}_{i,t}^{m} - \widetilde{p}_{i,t}^{m}) + \gamma_{i}\sigma(t - t_{0})$$
 (28)

and substituting equation (28) in (27) results in:

$$\widetilde{S}_{it} = (1 - \sigma)(\widetilde{p}_{it}^{m} - \widetilde{p}_{t}^{m}) + \gamma_{i}\sigma(t - t_{0})$$
(29)

Log differentiating equation (26) and taking into account the expression for the base-year import value shares (which can readily be obtained from (25)) yields:

$$\widetilde{p}_{t}^{m} = \sum_{i=1}^{r} S_{i0} \widetilde{p}_{it}^{m} + \frac{\sigma}{1-\sigma} \left(\sum_{i=1}^{r} S_{i0} \gamma_{i} \right) (t-t_{0})$$
 (30)

where:

$$S_{i0} = \frac{p_{i0}^{m} X_{i0}}{p_{0}^{m} M_{0}} = \beta_{i}^{\sigma} e^{\gamma_{i} \sigma t_{0}} \left(\frac{p_{i0}^{m}}{p_{0}^{m}} \right)^{1 - \sigma}$$
(31)

Combining equations (29) and (30) results in:

$$\widetilde{S}_{it} = (1 - \sigma) \left(\widetilde{p}_{ii}^{m} - \sum_{j=1}^{r} S_{j0} \widetilde{p}_{ji}^{m} \right)$$

$$+ \sigma \left(\gamma_{i} - \sum_{j=1}^{r} S_{j0} \gamma_{j} \right) (t - t_{0})$$
(32)

Equation (32), with the addition of a constant term, is the basis for the econometric estimations. For the estimations, the percentage changes are approximated by:

$$\widetilde{S}_{it} = \frac{S_{it} - S_{i0}}{S_{i0}}, \ \widetilde{p}_{it}^{m} = \frac{p_{it}^{m} - p_{i0}^{m}}{p_{i0}^{m}}$$
 (33)

Equation (32) expresses the change in the value share of the ith exporting country from an initial period as a function of the change in the price of the ith exporter relative to the change in the aggregate import price index and as a function of a time trend. If there are r exporters, there are r equations such as (32), each involving the parameter σ . Given the time-series data for the value shares and prices, σ should be estimated by time-series, cross-section regression.

The estimated version of equation (32) can be written as:

$$\frac{S_{it} - S_{j0}}{S_{i0}} = \lambda_0 \left(\frac{p_{it}^m}{p_{i0}^m} - \sum_{j=1}^r S_{j0} \frac{p_{jt}^m}{p_{j0}^m} \right) + \lambda_{1j} (t - t_0) + \lambda_{2j} + u_{jj}$$
(34)

where λ_0 , λ_{1i} , λ_{2i} (i=1,...,r) are parameters to be estimated and the u_{it} is an error term. In the pooled time-series, cross-section regression, the only parameter common to all equation is $\lambda_0 = 1 - \sigma$.

The following three alternative assumptions on the residuals were tried:

- (1) $E(u_{ii}) = 0$ for all i, t. Var $(u_{ii}) = s^2$ for all i, t. All other covariances are zero.
- (2) $E(u_{it}) = 0$ for all i, t. Var $(u_{it}) = (s^2)/(S_{i0})$ for all i, t. All other covariances are zero.
- (3) $E(u_{it}) = 0$ for all i, t. Var $(u_{it}) = (s^2)/(S_{i0}^2)$ for all i, t. All other covariances are zero.

With this specification of the residuals, estimation under assumption 1 is made by Ordinary Least Squares (OLS) and estimations under assumptions 2 and 3 are made with Generalized Least Squares (GLS).

Estimations were made for all EC countries. Data were available for both values and quantities of imports from all origins for a 13-year period (1966-78). The data that presented nonzero flows in all 13 years are used in the estimations. The methodology does not unfortunately allow the inclusion of countries that were exporters for some years and were not for others; this is a well-known, unresolved problem in the empirical elasticity-of-substitution literature (26, p. 385). However, because few countries were occasional exporters and accounted for an extremely small share of imports by EC countries, the bias in the estimation of σ was expected to be small.

The landed import prices from various origins p_{it} were approximated by import unit values; that is, by dividing the c.i.f. value of imports from individual origins by the c.i.f. quantity of imports from the same origin (both as reported by the importing country). This approximation will accurately represent the changes in domestic landed prices only if the tariff rates and levies have remained constant over time. However, this assumption is only partially valid (table 4). Nevertheless, because computing yearly tariff rates for all products from all origins is an impossible task, I used the approximation (incidentally, this is the standard approximation used by all researchers).

Table 5 reports the best results of the estimated equations.¹² The elasticities of substitution of processed products are generally larger than those for fresh products.

One can obtain the elasticity of substitution for the EC as a whole for one product category by weighting the individual country's elasticities of substitution by the base-year (1977) share of each member country's imports of the product in total EC imports.

For the remaining countries and regions of the world, the estimation of import substitution elasticities for fruit and vegetable products proved impossible, mostly because of lack of data (quantity data were usually

Table 5—Estimated elasticities of substitution of EC imports of fruit and vegetable products

	Commodity and SITC code							
Importing country	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)			
France Germany Netherlands Italy Belgium-Luxembourg United Kingdom Ireland Denmark	0.578 .509** .879** 1.090** .751** .804** 1.008**	1.654** 1.260** .670** .876** 1.095** .617** .774**	1.153** 1.276** 1.297** 1.631** .505** .592** .849** 1.632**	0.557** 1.113** 1.038** 1.068** .990** 1.226** 1.210** .752**	1.560** 1.694** .856** 1.335** 1.003** .702** .847** 1.185**			

^{**}Denotes statistical significance at the 1-percent level.

¹²The judgment as to which of the three specifications of the residuals gave the best estimate was made on the basis of overall fit (R^2) , sign of the estimated parameter σ (as is defined here, it should be positive), and significance of the estimate of σ .

missing). For these other countries, the elasticity of import substitution estimates by Hickman and Lau (14) for aggregate imports was adopted. The regional parameters were again obtained wherever possible by a weighting similar to that just described for the EC. Table 6 presents the resulting values of the σ parameters adopted for the trade projections. Note that, except for Eastern Europe, the values of the σ parameters for the EC are usually smaller than the corresponding values of other regions. This result makes sense because the EC is by far the largest importer of these products, absorbing a major share of the exports of almost every exporter. Hence, the EC will not have as many options for substitution among exporters, given relative price changes, as it already absorbs most of the surplus of the exporting countries.

Estimates of Income and Price Elasticities of Demand for Imports of Fruits and Vegetables

The parameters θ_k and ϵ_k (see equation (16)) of the trade model represent the aggregate income and price elasticities of demand for imports of a commodity category in an importing country.

I estimated these parameters for the EC countries by applying the methodology first introduced by Houthakker and Magee (17). I regressed the logarithm of the reported aggregate quantity of imports of a product category in a country against the logarithm of real consumption expenditures of that country and the logarithm of the l

rithm of the ratio of nominal import unit value over a domestic price deflator.

Tables 7 and 8 report the results of these estimates. The income elasticities of imports are almost always significant and conform to the *a priori* reasonable expectation that the income elasticities of processed fruits and vegetables are generally higher than those of the fresh products. The estimates of the price elasticities are not as good, and some have the wrong (positive) sign. The worst estimates were obtained in the fresh fruit category. This result was expected as fresh fruit is composed of several products which are subject to the CAP reference price system and which make picking up the impact of price movements on consumption difficult. Almost all the "wrong sign" estimates were, fortunately, insignificant, and the parameter values in these cases were set at zero.

I obtained the values of the parameters for the EC as before by weighting the individual estimated parameters by each country's EC share of 1977 imports of the relevant product. This method is theoretically correct if future income growth rates of the various countries are not too different. The income and price elasticities for the remaining countries were obtained from various estimates of aggregate income and price elasticities of imports. Besides the Houthakker and Magee article (17), sources included a paper by Goldstein and Khan (11) and a book by Stern, Francis, and Schumacher (28). When no estimates were available, a value of 1

Table 6—Values of the elasticity of substitution parameters used for trade projections

Commodity and SITC code					
Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)	
0.66 3.31	0.99 3.26	1.06 3.26	1.01 3.26	1.38 3.26	
2.61	2.44	2.44	2.77	2.44	
.16 1.26	.16 1.26	.16 1.26	.16 1.26	.16 1.26	
1.70	1.71	1.71	1.72	1.71	
2.59	2.59	2.59	2.59	2.59	
1.46	1.46	1.46	1.46	1.46 1.23	
	fruits (051) 0.66 3.31 2.61 .16 1.26 1.70 2.59	Fresh fruits (051) (052) 0.66 0.99 3.31 3.26 2.61 2.44 .16 1.6 1.26 1.26 1.70 1.71 2.59 2.59 1.46 1.46	Fresh fruits (051) Dried fruits fruits (052) Processed fruits fruits (053) 0.66 0.99 1.06 3.31 3.26 3.26 2.61 2.44 2.44 .16 .16 .16 1.26 1.26 1.26 1.70 1.71 1.71 2.59 2.59 2.59 1.46 1.46 1.46	Fresh fruits (051) Dried fruits (052) Processed fruits (053) Fresh vegetables (054) 0.66 0.99 1.06 1.01 3.31 3.26 3.26 3.26 2.61 2.44 2.44 2.77 .16 .16 .16 .16 1.26 1.26 1.26 1.26 1.70 1.71 1.71 1.72 2.59 2.59 2.59 2.59 1.46 1.46 1.46 1.46	

¹Excludes Spain, Greece, and Portugal.

for import income elasticity and a value of 0.5 for import price elasticities were assumed. Tables 9 and 10 present the values of the parameters used in the trade model.

Export Supply Price Elasticities, Export Supply Trends, and Income Trends

In many empirical studies of changes in trade patterns, the export supply-price elasticities are assumed infinite.

This assumption presupposes that the importing country is a price taker in world trade. This can hardly be the case for the EC which absorbs about half the world's exports of fruit and vegetable products. Other studies assume that export supply price elasticities are zero. This amounts to fixing the quantity of exports irrespective of world price. This assumption might be justified in the short run, but is not suited for a medium- or long-term comparative statics study. The only published estimates of export supply elasticities

Table 7—Estimated income elasticities of import demand for fruit and vegetable products for the EC

	Commodity and SITC code							
Importing country	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)			
France Germany Netherlands Italy Belgium-Luxembourg United Kingdom Ireland Denmark	0.75 * * .56 * * 1.52 * * .96 * .97 * * .09 .96 * * .40 * *	1.06** .54* .37 .49 .25 .55 .20 - 1.04**	2.46** 2.58** 1.97** .92 2.47** .48 1.75** 2.63**	1.39** 1.85** 2.99** .83* 3.04**361 .20 3.36**	3.18** 1.96** 1.78** 1.77* 3.53** 2.05** 1.90** 3.83**			

^{*}Denotes statistical significance at the 5-percent level.

Table 8—Estimated price elasticities of import demand for fruit and vegetable products for the EC

	Commodity and SITC code						
Importing country	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)		
France Germany Netherlands Italy Belgium-Luxembourg United Kingdom Ireland Denmark	0.22 34 33 .37 .30 02 .28*	- 0.71 19* 27 50* .10 25 .05 31*	- 0.61* 66* 31 - 1.85* 52* .37* 10 26	- 0.42 48 * * 75 * 63 * 89 * 74 * - 1.21 * * - 1.34 * *	- 0.65**71** - 1.43* - 1.55*99**09 - 1.10**		

^{*}Denotes statistical significance at the 5-percent level.

^{**}Denotes statistical significance at the 1-percent level.

¹Negative sign signifies "wrong" sign.

^{**}Denotes statistical significance at the 1-percent level.

Table 9—Income elasticities of import demand for fruit and vegetable products used in the trade models

	Commodity and SITC code					
Country or region	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)	
European Community	0.65	0.47	1.98	1.67	2.24	
Other Western Europe ¹	1.00	1.00	1.00	1.00	1.00	
Spain, Greece, and Portugal Centrally planned East	2.64	1.72	.78	.80	.61	
European countries	1.00	1.00	1.00	1.00	1.00	
United States	1.51	1.51	1.51	1.51	1.51	
Canada and Japan Argentina, Australia, Brazil, Mexico,	1.21	1.21	1.21	1.21	1.21	
New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and	1.00	1.00	1.00	1.00	1.00	
Turkey	1.00	1.00	1.00	1.00	1.00	
Rest of world	1.00	1.00	1.00	1.00	1.00	

¹Excludes Spain, Greece, and Portugal.

Table 10—Price elasticities of import demand for fruit and vegetable products used in the trade models¹

	Commodity and SITC code					
Country or region	Fresh	Dried	Processed	Fresh	Processed	
	fruits	fruits	fruits	vegetables	vegetables	
	(051)	(052)	(053)	(054)	(055)	
European Community	- 0.17	- 0.31	- 0.468	- 0.61	- 0.72	
Other Western Europe ²	31	31	31	31	31	
Spain, Greece, and Portugal	54	- 1.43	- 1.18	95	- 1.23	
Centrally planned East European countries United States Canada and Japan	50	50	50	50	50	
	80	80	80	80	80	
	74	74	74	74	74	
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and	86	86	86	86	86	
Turkey	50	50	50	50	50	
Rest of world	50	50	50	50	50	

 $^{^1{\}rm The~parameters~}\varepsilon k$ as defined in the trade models are equal to the absolute value of the figures. $^2{\rm Excludes~Spain,~Greece,~and~Portugal.}$

are those for aggregate exports by Goldstein and Khan (11). These estimates were adopted in this study for the EC countries and the United States whereas a value of 2.0 was used for the remaining regions. Table 11 shows the results of weighting the export supply price elasticities for individual EC countries by their EC base-year export shares and the assumed values for the other regions.

In the basic simulation, as well as in several sensitivity simulations of the trade model, I assumed that the historical growth rates of export supplies of fruit and vegetable products would continue. I estimated the historical growth rates for exports of these products by regressing the logarithm of yearly total reported quantity exported by various countries or regions on a time trend. The growth rates thus estimated were appropriately weighted to arrive at regional export-supply growth rates. Table 12 presents the estimated historical yearly growth rates. The relatively rapid growth of exports of processed fruits and vegetables by most exporters is noteworthy.

The final figures presented in this section are the fore-casted growth rates for real expenditure in the various regions of the world that are specified in the model. These are assumed to be the same as the forecasted growth rates of real incomes. These growth rates are forecasts of the average yearly income growth rates for 1977-86 for all countries of the world and are weighted

according to the importance of each country in a region's 1977 total fruit and vegetable imports. I estimated the average yearly growth rates for 1977-86 by computing total real income growth during the period for each country from yearly real growth income forecasts reported by Kost (19)13 and then by computing the constant yearly growth rate that would yield the same total growth when compounded over the same period. When forecasts were not available for some later years, the last available growth rate was used for the remaining years. Table 13 summarizes the results of the computations. The figures generally reported the low, real growth rates in income over the 1977-80 period with somewhat more optimistic forecasts for the first half of the eighties.

Tariff and Nontariff Barrier Changes

Enlargement is simulated in the trade models by changes in the parameters a_{ij} . Recall that a_{ij} represents the price differential between the export price of the product of the ith exporting region and the domestic consumer price of the product in the jth importing region. A negative value for \widetilde{a}_{ij} (the percentage change in \widetilde{a}_{ii}) means that this price differential is narrowed.

Table 11—Export supply price elasticities for fruit and vegetable products used in the trade models

	Commodity and SITC code						
Country or region	Fresh	Dried	Processed	Fresh	Processed		
	fruits	fruits	fruits	vegetables	vegetables		
	(051)	(052)	(053)	(054)	(055)		
European Community Other Western Europe ¹ Spain, Greece, and Portugal Centrally planned East	1.17	2.03	2.11	2.01	1.89		
	2.0	2.0	2.0	2.0	2.0		
	2.0	2.0	2.0	2.0	2.0		
European countries	2.0	2.0	2.0	2.0	2.0		
United States	6.6	6.6	6.6	6.6	6.6		
Canada and Japan	2.0	2.0	2.0	2.0	2.0		
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and	2.0	2.0	2.0	2.0	2.0		
Turkey	2.0	2.0	2.0	2.0	2.0		
Rest of world	2.0	2.0	2.0	2.0	2.0		

¹Excludes Spain, Greece, and Portugal.

¹³Kost's pamphlet summarizes all available econometric forecasts for income for all countries of the world as of 1980 for periods ranging from 2-3 years (that is, until 1983) up to 5-6 years (that is, until 1986). It also summarizes consensus forecasts.

Hence, trade liberalization between two regions would imply a negative value for \widetilde{a}_{ij} . A positive value for \widetilde{a}_{ij} , in turn, would denote the institution of additional trade barriers between country i and country j.

In the simulations reported in this study, the most significant changes are the reductions in EC tariffs and levies facing the imports of fruit and vegetable products from Spain, Greece, and Portugal as well as the raising of trade barriers facing other exporters of these products to Spain, Greece, and Portugal. I obtained the current levels of EC tariffs toward Spain, Greece, and Portugal by weighting the detailed commodity-specific EC preferential tariff rates for each of these countries (exhibited earlier in table 2) by the shares of EC imports of individual products from them as derived from the analytical tables of foreign trade (NIMEXE) published by the Statistical Office of the European Communities. The tariff equivalents of levies were obtained from Sampson and Yeats (27).

To compute the aggregate pre-enlargement tariff equivalent (both tariffs and levies) of the EC toward Spain, Greece, and Portugal, I used the preferential tariff rates for 1978 of the EC toward each of the Three and the 1974 tariff equivalent of levies employed by Samp-

son and Yeats (27). The individual rates thus computed were then weighted by the import shares of Spain, Greece, and Portugal in total EC imports for each product from the Three.

I assumed, finally, that the additional barriers Spain, Greece, and Portugal would raise toward imports from third countries would equal the tariff equivalent of EC levies obtained from Sampson and Yeats (27). I also assumed the tariff rates of Spanish, Greek, and Portuguese imports from the EC would not change. ¹⁴ All other changes in the parameters a_{ij} are assumed to equal zero. Table 14 summarizes the values of the nonzero percentage changes in the a_{ij} assumed in the basic simulations. ¹⁵

Table 12—Annual growth rates of export quantities of fruit and vegetable products, by regions, 1966-78

	Commodity and SITC code								
Country or region	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)				
	Percent								
European Community Other Western Europe ¹ Spain, Greece, and Portugal Centrally planned East	3.9 - 2.9 4.0	11.1 9.8 4	9.7 16.3 11.7	5.4 - 2.3 5.0	8.6 5.3 9.9				
European countries United States Canada and Japan	10.3 6.6 *4.4	2.4 5 4.8	.1 5.7 1.1	- 2.0 5.3 1.6	15.3 8.4 - 4.9				
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and	1.6	- 2.4	18.1	7.0	10.3				
Turkey Rest of world	8.2 8.3	3.1 7.6	8.0 10.0	2.7 15.5	14.8 - 2.5				

¹Excludes Spain, Greece, and Portugal.

¹⁴It was impossible to obtain information about the levels of protection of Spain, Greece, and Portugal on fruit and vegetable products. However, their imports of these products are small (less than 0.5 percent of total world imports); hence, only minimal distortions are introduced by the assumptions governing tariff rates of each of the Three.

¹⁵The percentage changes in a_{ij} reported in table 14 are derived from the standard formula $a_{ij} = dt_{jj}/(1 + t_{ij})$ where t_{ij} is the preenlargement computed or assumed levels of equivalent tariffs and where dt_{ij} is the post-enlargement tariff changes.

Empirical Results for the Aggregate Trade Models

Changes in trade patterns of fruit and vegetable products could arise even in the absence of the tariff changes that will accompany EC enlargement. Changes are possible because rates of expenditure growth and rates of export supply growth, as well as expenditure elasticities of import demand, differ in the various trading countries and regions. This situation will lead to different rates of growth of excess demand in each region. To bring these into balance, export prices (conceptually, these are the prices for exports viewed internally by the producers) will change and the shares of the various origins in the imports of the various importing countries will also change.

Table 13—Forecasts of average yearly real expenditure growth rates for the regions of the trade model, 1977-86

Country or region	Total real expenditure growth rate per annum			
	Percent			
European Community Other Western Europe ¹ Spain, Greece, and Portugal Centrally planned East European Countries	2.7 2.9 3.3 2.7			
United States Canada and Japan Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa ²	2.9 3.8 4.5			
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey ³	5.5			
Rest of world	5.5			

¹Excludes Spain, Greece, and Portugal.

Source: Computed from (19).

Base Projections

The simulations performed isolated the trade effects of income and export supply changes from those which arise solely from changes in tariffs (or tariff equivalent) that EC enlargement will entail. Using 1977 as a base year, I first projected 1986 trade patterns under the assumption of no EC enlargement. The resulting 1986 trade matrices were then used as a new base for the computation of the final trade matrices. 16 I chose 1977 as a base year because it was the latest year for which the U.N. origin-destination data appeared complete. I chose 1986 because the Greek transition period would be over by then and it might be a reasonable forecast of the date of both Spanish and Portuguese entry into the EC. It is indeed difficult to isolate the best year for a forecast because the three new members have different entry dates and different lengths of transition. The choice of an earlier or later year would only scale the results by some fixed fraction close to unity (as was found by experimentation with alternative projection years) without changing at all the direction or orders of magnitude of the projected figures.

Table 15 shows the projected real export prices in 1986 for the five categories of fruit and vegetable products considered. The left side of the table presents the projected prices under the assumption of no EC enlargement, and the right side shows the final prices after the effects of EC enlargement have been compounded to those of mere income and export supply changes. The figures at the bottom are world prices (that is, terms of trade) obtained by weighting the individual export prices by the projected value shares of each exporter in total world exports (that is, Paasche indexes).

Comparing the values on the left side of the table with those on the right side, one can see that EC enlargement slightly decreases export prices of all exporting regions except Spain, Greece, and Portugal whose prices are substantially increased by enlargement. The most disturbing feature of the table, however, is the projected decline in world terms of trade of all fruit and vegetable categories. The worst outlook is for processed fruits whose world terms of trade are projected to decline by 23 percent in the next decade. The only category for which the medium-term outlook seems tolerable is dried fruit. These results are the consequence of an increase in export supplies of these commodities coupled with a slowdown in world demand.

²Major exporters of fruit and vegetable products excluding South Africa and the Middle Eastern countries.

³North African and Middle Eastern countries which are important in the world fruit and vegetable trade.

¹⁶The piecewise linearization procedure was used to project the 1986 trade patterns in the absence of enlargement. The effects of enlargement were computed in one additional step.

Table 14—Assumed percentage changes after EC enlargement in export-import price differentials

Parameter change	Commodity and SITC code								
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)				
Spain, Greece, and Portugal;			Percent						
European Community Other Western Europe;	- 32.13	– 27.15	- 27.72	- 31.58	- 26.91				
Spain, Greece, and Portugal Centrally planned East European countries;	37.1	37.1	26.8	37.1	26.8				
Spain, Greece, and Portugal	37.1	37.1	26.8	37.1	26.8				
United States; Spain, Greece, and Portugal	37.1	37.1	26.8	37.1	26.8				
Canada and Japan; Spain, Greece, and Portugal Argentina, Australia, Brazil, Mexico, New Zealand,	37.1	37.1	26.8	37.1	26.8				
South Africa; Spain, Greece, and Portugal, Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	37.1	37.1	26.8	37.1	26.8				
and Turkey; Spain, Greece, and Portugal Rest of world; Spain,	37.1	37.1	26.8	37.1	26.8				
Greece, and Portugal	37.1	37.1	26.8	37.1	26.8				

Source: For Spain, Greece, and Portugal; European Community computed; for the remainder, see (27).

Table 16 summarizes the projected changes in total exports of fruit and vegetable products due to income and export supply changes as well as those due solely to the effects of EC enlargement. With the notable exception of Spain, Greece, and Portugal, the exports of all fruit and vegetable products of almost all other exporting regions will fall strictly as a result of EC enlargement. The amounts of the declines are quite small, often about two orders of magnitude smaller (in absolute value) than the corresponding large export increases projected otherwise. For Spain, Greece, and Portugal, EC accession will mean sharp increases in total exports of the same order of magnitude and in addition to the increases expected otherwise. The small effects on other exporters and the large effects on Spain, Greece, and Portugal are to be expected from the small falls in export prices of all exporters except Spain, Greece, and Portugal (table 15). Total world exports are expected to increase as a result of EC enlargement (table 16). This result comes about because a substantial trade liberalization will occur in one of the largest trade flows; namely, the one between Spain, Greece, and Portugal and the EC.

Table 17 shows the projected 1986 changes in total imports of fruit and vegetable products again caused by both income and export supply growth as well as by EC enlargement. The major change from EC enlargement alone will affect EC imports, which will expand substantially.

Table 18, which shows the changes in net fruit and vegetable exports projected in 1986, is revealing. Most of the base-year net exporting regions (SGP, OEX, and NAME) are expected to expand their net exports given expected income and export growth trends (left side of table). A notable exception is the United States, which was a net exporter of all products except processed

Table 15—Base projection: 1986 indexes of export prices of fruit and vegetable products

Country or region	Commodity and SITC code						
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)		
			1977 prices	= 100			
Indexes of export prices resulting from							
income and export supply changes: European Community	88.3	78.6	81.4	95.3	89.5		
Other Western Europe ¹	108.2	82.3	62.6	116.1	96.9		
Spain, Greece, and Portugal	91.1	108.2	74.8	96.4	85.1		
Centrally planned East	91.1	100.2	74.0	30.4	00.1		
European countries	73.1	99.6	105.6	115.7	69.2		
United States	95.6	104.2	96.4	97.6	95.7		
Canada and Japan	122.6	97.6	106.1	107.0	129.5		
Argentina, Australia, Brazil, Mexico,		• • • • • • • • • • • • • • • • • • • •					
New Zealand, and South Africa	101.1	116.6	58.2	90.4	84.3		
Algeria, Cyprus, Egypt, Iran, Iraq,							
Israel, Morocco, Tunisia,							
and Turkey	80.1	97.7	85.9	103.7	72.2		
Rest of world	83.3	89.1	80.1	65.9	120.1		
World	87.7	100.3	77.1	89.0	92.8		
Final indexes of export prices							
(including effects of EC enlargement):							
European Community	87.7	78.3	81.1	95.4	89.0		
Other Western Europe ¹	107.7	82.0	62.5	115.0	96.3		
Spain, Greece, and Portugal	95.5	112.4	79.7	103.9	89.1		
Centrally planned East	00.0	112.7	7 0.7	100.0	00.1		
European countries	72.9	98.9	105.2	115.6	68.8		
United States	95.5	103.9	96.3	97.5	95.5		
Canada and Japan	122.5	97.2	105.9	106.4	129.4		
Argentina, Australia, Brazil, Mexico,							
New Zealand, and South Africa	100.7	115.9	57.9	89.3	84.5		
Algeria, Cyprus, Egypt, Iran, Iraq,							
Israel, Morocco, Tunisia,							
and Turkey	79.2	96.5	85.5	103.0	71.8		
Rest of world	83.0	88.6	79.9	65.6	120.0		
World	88.0	100.9	77.3	89.7	93.3		

¹Excludes Spain, Greece, and Portugal.

Table 16—Base projection: 1986 projected changes of total export value of fruit and vegetable products

Country or region	Commodity and SITC code							
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)			
	1,000 dollars (1977)							
Projected changes due only to income								
and export supply effects:	410 407	04.000	405 407	4 040 075	007.000			
European Community	419,437	31,030	435,487	1,010,075	627,882			
Other Western Europe ¹	- 2,367	684	81,071	4,588	8,385			
Spain, Greece, and Portugal Centrally planned East	188,987	22,432	173,037	241,457	369,672			
European countries	69,975	4,612	22,525	29,981	114,423			
United States	319,415	34,607	104,431	190,375	103,548			
Canada and Japan	2,095	643	16,315	37,337	8,223			
Argentina, Australia, Brazil, Mexico,	2,000	040	10,010	07,007	0,220			
New Zealand, and South Africa	137,916	7,093	669 ,392	286,916	66,695			
Algeria, Cyprus, Egypt, Iran, Iraq,	,	,	,	,	,			
Israel, Morocco, Tunisia,								
_and Turkey	413,555	48,579	81,810	157,015	132,259			
Rest of world	1,153,619	42,494	307,924	1,180,028	97,230			
World ²	2,702,632	192,175	1,891,992	3,137,772	1,528,317			
Projected changes due only to EC								
enlargement:								
European Community	- 15,132	- 434	- 8,721	2,555	- 15,262			
Other Western Europe ¹	- 219	- 14	- 688	- 921	-311			
Spain, Greece, and Portugal	107,702	15,080	52,188	119,766	77,176			
Centrally planned East	,	,	,	·	,			
European countries	– 1,234	- 333	- 1,622	- 486	- 2,099			
United States	– 11,545	-3,872	-2,308	- 8,015	- 3,537			
Canada and Japan	– 83	– 17	– 283	- 1,818	- 111			
Argentina, Australia, Brazil, Mexico,	0.050	004	40.074	40.404	500			
New Zealand, and South Africa	- 6,952	- 881	- 12,674	- 19,181	596			
Algeria, Cyprus, Egypt, Iran, Iraq,								
Israel, Morocco, Tunisia, and Turkey	- 11,493	- 5,699	- 2,074	- 7,791	- 2,833			
Rest of world	- 11,493 - 27,125	- 5,699 - 1,332	- 5,245	- 7,791 - 17,571	- 1,636			
ricot of world	- 21,125	- 1,552	- 5,245	- 17,571	- 1,000			
World ²	33,919	2,498	18,574	66,538	51,983			

¹Excludes Spain, Greece, and Portugal. ²Figures may not add up because of rounding.

Table 17—Base projection: 1986 projected changes in total import value of fruit and vegetable products

	Commodity and SITC code						
Country or region	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)		
			1,000 dollars (1977)			
Projected changes due only to income							
and export supply effects:	821,055	40,957	1 061 024	1 064 104	067.004		
European Community Other Western Europe ¹	264,177	22,824	1,061,034 112,708	1,864,134 116,940	967,294 47,462		
Spain, Greece, and Portugal	39,805	4,470	26,483	45,445	3,928		
Centrally planned East							
European countries	173,796	18,600	23,070	38,087	21,688		
United States	393,912	18,502	233,929	186,093	128,073 101,874		
Canada and Japan Argentina, Australia, Brazil, Mexico,	481,146	33,541	190,959	372,563	101,074		
New Zealand, and South Africa	120,734	13,295	33,263	99,434	43,070		
Algeria, Cyprus, Egypt, Iran, Iraq,							
Israel, Morocco, Tunisia,	77,110	4,585	18,325	70 150	12.400		
and Turkey Rest of world	330,906	35,402	192,222	78,153 336,926	12,490 202,439		
Tiost of World	,	ŕ	,	,	•		
World ²	2,702,632	192,175	1,891,992	3,137,772	1,528,317		
Projected changes due only to EC							
enlargement:							
European Community	38,034	6,838	33,953	93,655	68,865		
Other Western Europe ¹	417	161	523	– 1,665	- 383 2 100		
Spain, Greece, and Portugal Centrally planned East	– 10,364	- 4,046	– 16,567	- 32,935	- 3,190		
European countries	- 2,187	- 1,086	– 783	135	- 844		
United States	3,198	5	1,529	3,485	-6,414		
Canada and Japan	2,743	217	929	1,905	1,647		
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	788	156	216	639	- 1,583		
Algeria, Cyprus, Egypt, Iran, Iraq,	700	150	210	039	- 1,565		
Israel, Morocco, Tunisia,							
and Turkey	175	26	27	174	- 125		
Rest of world	1,115	227	- 1,254	1,144	- 2,697		
World ²	33,919	2,498	18,574	66,538	51,982		

¹Excludes Spain, Greece, and Portugal. ²Figures may not add up because of rounding.

Table 18—Base projection: 1986 projected changes in net export value of fruit and vegetable products

Country or region	Commodity and SITC code							
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)			
	1,000 dollars (1977)							
Projected changes due only to income								
and export supply effects: European Community Other Western Europe¹ Spain, Greece, and Portugal	- 401,618 - 266,543 149,182	- 9,926 - 22,140 17,962	- 625,547 - 31,636 146,554	- 854,059 - 112,352 196,012	- 339,412 - 39,077 365,744			
Centrally planned East European countries United States Canada and Japan	- 103,822 - 74,497 - 479,051	- 13,988 - 16,105 - 32,898	- 545 - 129,497 - 174,644	- 8,107 4,283 - 335,227	92,736 - 24,525 - 93,652			
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	17,182	-6,202	636,129	187,481	23,625			
and Turkey Rest of world	336,445 822,713	43,995 7,092	63,485 115,703	78,862 843,102	119,769 - 105,209			
World ²	0	0	0	0	0			
Projected changes due only to EC								
enlargement: European Community Other Western Europe ¹ Spain, Greece, and Portugal	- 53,166 - 636 118,067	- 7,272 - 175 19,126	- 42,674 - 1,212 68,756	- 91,100 744 152,701	- 84,128 72 80,366			
Centrally planned East European countries United States Canada and Japan	953 - 14,743 - 2,826	753 - 3,877 - 234	- 839 - 3,837 - 1,212	- 622 - 11,500 - 3,723	- 1,255 2,877 1,536			
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	- 7,740	- 1,037	- 12,891	- 19,821	2,179			
and Turkey Rest of world	- 11,668 - 28,240	- 5,725 - 1,559	- 2,101 - 3,991	- 7,965 - 18,715	- 2,708 - 1,061			
World ²	0	0	0	0	0			

¹Excludes Spain, Greece, and Portugal. ²Net exports for the world are zero, and hence changes in net exports are also zero.

vegetables in 1977 and is projected to substantially drop its net exports even to the point of becoming a net importer in the case of processed fruit. However, EC enlargement (right side of table), will certainly help even more the balance of payments of Spain, Greece, and Portugal, while adversely affecting most of the remaining regions. Spain, Greece, and Portugal will reap the only total benefit from enlargement at the expense of almost everyone else including EC members. The magnitude of the "injuries," however, inflicted on all the other regions is quite small compared with the magnitude of changes that are expected to arise from the effects of income and export supply growth alone.

We now turn to the changes of trade flows between regions. Tables 19 and 20 exhibit the geographical changes in EC imports and Spanish, Greek, and Portuguese exports, respectively, that are projected to occur with and without EC enlargement. The geographical changes in trade flows resulting strictly from EC enlargement are as expected. EC imports shift significantly toward Spain, Greece, and Portugal and away from all other traditional sources including other EC countries; similarly, Spanish, Greek, and Portuguese exports shift toward the EC and away from other destinations. Because the EC imports from sources other than Spain, Greece, and Portugal and the Three's exports to destinations other than the EC will diminish, it is not clear a priori whether exports of other exporters to destinations other than the EC will increase or not. In fact, the results are mixed. Table 21 presents the projected changes in the destination of U.S. exports of fruit and vegetable products. Although enlargement by itself decreases U.S. exports to the EC and Spain, Greece, and Portugal, it nevertheless increases exports to the remaining West European countries and to Canada and Japan, two of the largest trading partners of the United States.

The figures in the preceding tables conceal substantial variations in the trade positions of individual countries within the EC and Spain, Greece, and Portugal. To reach an understanding of these country-specific effects, I also ran the trade model in a disaggregated form. Table 22 presents the projected net export changes in fruit and vegetable products of the EC and Spain, Greece, and Portugal. The left side of the table is instructive in view of the aggregate EC figures appearing in table 18. The EC is expected to become an even larger importer of fruit and vegetable products. Although treated as one region, West Germany and, to a lesser extent, Ireland are the only countries for which the model forecasts that imports of all products will increase. France is forecasted to increase its net imports of fresh fruits, processed fruits, and fresh vegetables

and to increase net exports of dried fruits and processed vegetables.

The right side of the table indicates that, as a consequence of enlargement, the increases in net imports of fruit and vegetable products for the EC as a whole will be spread rather evenly among all nine members. Of the Three, Spain will gain the most from enlargement, although surprisingly, the magnitude of accession-induced increases in net exports are not much larger than those forecast for Greece, especially in the processed products categories.

Trade creation and trade diversion due to enlargement are obtained in the following way. Trade creation refers to increased trade within the enlarged EC that arises because cheaper supplies from an enlarged Community replace more expensive products produced within the nine EC countries or in Spain, Greece, and Portugal before enlargement. We can estimate this effect by adding (algebraically) the enlargement-induced imports of the EC and Spain, Greece, and Portugal with one another. Trade diversion, in turn, refers to the switching of EC, Spanish, Greek, and Portuguese imports from traditional sources outside to more expensive sources within the enlarged area. One can obtain estimates of this effect by algebraically summing the enlargement-induced changes in imports of the EC and Spain, Greece, and Portugal from sources other than one another.

Table 23 presents the results of these calculations. On balance, the next EC enlargement will be beneficial to the enlarged EC in fruit and vegetable products. Trade creation is projected to be larger than trade diversion in all products and particularly in fresh and processed vegetables. The net gain to the enlarged EC is projected to be about \$150 million in 1977 prices, a rather substantial figure given the small share of fruit and vegetable products in total EC trade. These gains will accrue mostly to EC consumers who will benefit from substantial increases in cheaper imports from Spain, Greece, and Portugal. The losses to EC producers, however, will not be large because only a small proportion of the increased fruit and vegetable imports in an enlarged EC will be obtained at the expense of previous EC exports. The relevant figures appear at the top of table 19 (right side) and are never larger (in absolute value) than 25 percent of the figures for increased EC imports from Spain, Greece, and Portugal (row 3 of table 19).

The results convey only a portion of what happens in the trade flows of the rest of the world. Appendix tables 16-20 show the complete matrices of changes in

Table 19—Base projection: 1986 projected changes in geographical origins of EC import value of fruit and vegetable products

Country or region	Commodity and SITC code						
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)		
		7	1,000 dollars (1	977)			
Projected changes due only to income and export supply effects:							
European Community Other Western Europe ¹ Spain, Greece, and Portugal	268,601 660 121,743	8,098 133 4,404	383,348 30,181 129,517	812,734 7,236 204,905	514,368 3,739 176,541		
Centrally planned East European countries United States Canada and Japan	19,640 27,187 - 73	862 4,375 32	36,895 36,241 6,678	27,683 50,128 17,908	72,325 46,822 1,675		
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	37,582	- 626	271,217	50,371	7,223		
and Turkey Rest of world	150,368 195,351	18,834 4,846	69,523 97,439	128,700 564,473	102,020 42,587		
World ²	821,055	40,957	1,061,034	1,864,134	967,294		
Projected changes due only to EC							
enlargement: European Community Other Western Europe ¹ Spain, Greece, and Portugal	- 35,225 - 313 129,910	- 1,334 - 24 18,339	- 11,481 - 806 60,434	- 32,707 - 114 143,593	- 21,151 - 166 104,528		
Centrally planned East European countries United States Canada and Japan	- 1,845 - 5,480 - 45	- 316 - 2,595 - 11	- 1,763 - 1,769 - 389	- 1,659 - 1,759 - 493	- 2,424 - 2,720 - 363		
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	- 9,627	- 845	- 5,273	– 123	- 437		
and Turkey Rest of world	- 16,233 - 23,108	- 5,327 - 1,049	- 2,067 - 2,933	- 2,910 - 10,173	- 3,297 - 5,104		
World ²	38,034	6,838	33,953	93,655	68,865		

¹Excludes Spain, Greece, and Portugal. ²Figures may not add up because of rounding.

Table 20—Base projection: 1986 projected changes in geographical distribution of the export value of fruit and vegetable products for Spain, Greece, and Portugal

	Commodity and SITC code						
Country or region	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)		
		7	1,000 dollars (1	977)			
Projected changes due only to income and export supply effects:	101710	4.404	100 517	004.005	170 5 1 1		
European Community Other Western Europe ¹ Spain, Greece, and Portugal Centrally planned East	121,743 20,136 326	4,404 - 508 129	129,517 3,560 621	204,905 20,481 4,475	176,541 13,480 229		
European countries United States Canada and Japan	33,263 1,040 354	11,918 2,834 1,884	8,310 2,399 1,879	515 2,045 3,336	10,374 69,886 23,612		
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	2,627	752	608	4,731	16,165		
and Turkey Rest of world	3,721 5,781	391 629	891 25,252	859 3,111	3,253 56,133		
World ²	188,987	22,432	173,037	241,457	369,672		
Projected changes due only to EC enlargement:							
European Community Other Western Europe ¹ Spain, Greece, and Portugal Centrally planned East	129,910 - 18,482 260	18,339 - 1,010 95	60,434 - 2,546 212	143,593 - 17,372 848	104,528 - 4,418 54		
European countries United States Canada and Japan	- 1,278 - 186 - 81	- 873 - 550 - 467	- 483 - 468 - 442	- 29 - 663 - 1,693	- 571 - 8,588 - 3,702		
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	- 821	– 271	- 232	- 3,732	- 3,422		
and Turkey Rest of world	- 725 - 895	- 79 - 104	- 190 - 4,098	- 262 - 924	- 450 - 6,255		
World ²	107,702	15,080	52,188	119,766	77,176		

¹Excludes Spain, Greece, and Portugal. ²Figures may not add up because of rounding.

Table 21—Base projection: 1986 projected changes in geographical distribution of U.S. exports of fruit and vegetable products

	,	Com	modity and SI	ΓC code	
Country or region	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
			1,000 dollars (1	977)	
Projected changes due only to income and export supply effects:				•	
European Community Other Western Europe ¹ Spain, Greece, and Portugal Centrally planned East	27,187 1,566 6,771	4,375 1,798 879	36,241 - 10,366 - 201	50,128 3,844 1,808	46,822 2,755 869
European countries United States	8,258	192 0	33	1,287	83
Canada and Japan	0 201,144	17,553	0 53,357	0 89,956	0 34,308
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	10,601	2,883	278	4,711	1,894
and Turkey Rest of world	709 63,179	231 6,696	1,014 24,076	11,838 26,804	405 16,416
World ²	319,415	34,607	104,431	190,375	103,548
Projected changes due only to EC					
enlargement: European Community Other Western Europe ¹ Spain, Greece, and Portugal Centrally planned East	- 5,480 578 - 6,552	- 2,595 218 - 1,714	- 1,769 - 31 - 722	- 1,759 699 - 7,460	- 2,720 262 - 2,204
European countries United States Canada and Japan	- 69 0 2	- 7 0 192	- 1 0 - 100	5 0 375	-2 0 639
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	– 25	19	– 13	44	169
and Turkey Rest of world	2	2 14	3 325	35 46	11 308
World ²	- 11,545	- 3,872	- 2,308	- 8,015	- 3,537

¹Excludes Spain, Greece, and Portugal. ²Figures may not add up because of rounding.

Table 22—Base projection: 1986 projected changes in net exports of fruit and vegetable products for EC-member countries and Spain, Greece, and Portugal

		Comn	nodity and SITC	code	
Country or region	Fresh	Dried	Processed	Fresh	Processed
	fruits	fruits	fruits	vegetables	vegetables
	(051)	(052)	(053)	(054)	(055)
		1,	000 dollars (1977 ₎)	
Projected changes due only to income and export supply effects: France	– 144,121	2,215	– 250,743	213,849	11,270
Germany Netherlands Italy Belgium-Luxembourg United Kingdom Ireland Denmark Spain Greece Portugal	- 295,197	- 9,811	- 514,990	- 675,415	- 419,845
	- 85,669	- 1,088	- 17,916	62,211	203,523
	78,582	783	168,227	76,043	29,016
	- 61,669	- 924	31,317	- 201,559	- 123,834
	14,472	- 7,106	- 3,817	61,495	- 83,732
	- 26,802	- 1,131	- 18,924	- 5,441	- 7,760
	692	5,791	- 23,799	- 59,309	- 14,674
	109,303	4,692	23,618	187,031	200,178
	78,820	24,655	127,603	39,924	203,037
	- 16,674	- 858	- 1,161	- 5,640	12,185
Projected changes due only to EC enlargement: France Germany Netherlands Italy Belgium-Luxembourg United Kingdom Ireland Denmark Spain Greece Portugal	- 2,122	- 1,837	- 9,888	- 16,794	- 19,107
	- 38,238	- 484	- 22,165	- 18,548	- 12,626
	- 8,159	- 477	- 3,149	- 16,087	- 11,620
	- 7,056	- 627	- 4,816	- 2,224	- 26,237
	- 19	- 7	- 3,047	- 4,466	- 4,214
	187	- 3,934	1,170	- 18,892	- 2,806
	- 337	53	- 75	- 291	- 1,047
	58	- 56	- 274	- 4,616	306
	90,807	4,147	40,083	112,362	44,334
	17,638	13,251	30,029	23,411	29,445
	32,105	154	1,408	4,063	7,698

world trade flows between 1977 and 1986 which are due only to the secular effects of income growth and export supply growth. Appendix tables 21-25 exhibit the static trade flow changes projected to occur in the 1986 trade matrix as a consequence solely of the tariff effects of EC enlargement. The tables presented in the text were derived from the more detailed tables in appendix B.

Combining the tables in appendix A with those of appendix B yields other information. For instance, by adding the base year matrix of trade flows for each product category from appendix A to the matrices of changes from appendix B, one can obtain the final matrix of 1986 projected trade flows, and from that one can compute trade shares (table 24). Factors other

than the enlargement actually cause the more substantial changes in the shares of various exporting regions in the EC's imports. In fact, the principal impact of the enlargement will be to increase the share of Spain, Greece, and Portugal in the EC's imports by 2-4 percent at the expense of imports from other EC countries. The import shares of other EC suppliers of fruit and vegetable products diminish by an almost imperceptible amount. This effect is to be expected as enlargement will lead to tariff changes mainly in the trade flow of two regions.

Sensitivity Analysis

The results presented in the previous section illustrate the effects of the basic assumptions of the trade model.

Table 23—Base projection: Trade creation and trade diversion in an enlarged EC in fruit and vegetable products

Commodity and SITC code	Trade creation (TC)	Trade diversion (TD)	Net trade creation (TC-TD)
	1,0	00 dollars (1	977)
Fresh fruits	104,336	100,525	3,811
(051) Dried fruits	15,576	12,901	2,675
(052) Processed	50,959	36,315	14,644
fruits (053) Fresh vege-	136,698	75,841	60,857
tables (054) Processed vegetables (055)	90,784	26,301	64,483
Total	398,353	251,883	146,470

Here I examine departures from the basic assumptions. Only some of the more interesting analyses are discussed.

The trade model presented earlier in this report relied heavily on the assumed values of the elasticity of substitution parameters σ for the predictions of changes in trade patterns. As already indicated, it was only for the EC that these parameters were estimated empirically. In the first sensitivity experiment, the values of σ , assumed for all other countries or regions except the EC, are increased to 3 (except for the parameters for Other Western Europe (OWE) whose base value is larger than 3). All other basic assumptions were retained. The rationale for assuming increases is that the originally assumed values of σ were obtained from empirical estimates of aggregate import substitution elasticities. Because fruits and vegetables are a subcategory of aggregate imports of every country, one might expect that they would respond more than total imports to relative price changes.

Table 25 presents the projected changes in the EC's import pattern. The assumptions of this simulation imply easier geographical substitutions for all world regions except the EC as compared with the base run. This simulation leads to a more even geographical distribution of total changes in EC imports compared with the

base run (tables 19 and 25). However, the total changes in EC imports (bottom of table 25) are quite close to the totals in table 19. This result is uniform for most of the aggregate trade flows because the equilibrium-projected export prices differ only marginally from those of the base run. (In fact, most of the export prices are within 1 percent of the base projections.)

Table 26 presents the trade creation and trade diversion effects predicted for this experiment. The increase in the tendency toward geographic substitution of regions other than the EC simulated in this run results in more total trade creation and less total trade diversion with an attendant increase in total net trade creation from the base run of 19 percent.

The above results contrast with the set of projections where the estimated elasticity of substitution of EC imports was doubled for all products while the o parameters for all other regions (and all other parameters) were left at their base values. The rationale for this experiment is that the empirical estimations of the σ parameters reported earlier could be biased because the data used did not reflect the internal prices faced by EC consumers. Table 27 presents the new projections for the EC import pattern. By comparing this table with the base figures in table 19, one can discern that, although total EC import changes due only to trend factors (the bottom figures in the first five columns of table 27) remain close to their base values, the total EC import changes due to enlargement decrease (except for fresh vegetables). Anyone examining the exchange in the geographical origin of EC imports due only to enlargement can see that the increases of imports from Spain, Greece, and Portugal are much higher than they were in the base projections. Of course, this result is expected given the assumption that the EC ease of geographic import substitution is much larger than in the base run.

Table 28 illustrates that a larger elasticity of substitution spurs both trade creation and trade diversion. The net effect, however, is to increase net trade creation by only 14 percent.

The price elasticities of export supply for most countries were set at an arbitrary value equal to 2 in the base run. This figure may be too low given that the analysis is for specific products whose longrun supply is expected to respond far more to relative real price changes than to a country's aggregate supply of exports because of substitution among products. A simulation was, therefore, run in which the price elasticities of export supplies were increased to 6 for all regions of the

Table 24—Base projection: EC base import shares and projected import shares in 1986 before and after enlargement

		Fresh fruits (SITC 052)			Dried fruits (SITC 052)		Processed fruit (SITC 053)		
Origin of EC imports		1986 imp	ort share		1986 imp	ort share		1986 impo	ort share
	1977 import share	Before enlarge- ment	After enlarge- ment	1977 import share	Before enlarge- ment	After enlarge- ment	1977 import share	Before enlarge- ment	After enlarge- ment
					Share ¹				
European Community Other Western Europe ² Spain, Greece,	0.333	.332 .003	0.323 .003	0.065 .001	0.075 .001	0.071 .001	0.387 .020	0.376 .023	0.368 .023
and Portugal Centrally planned East	.171	.167	.192	.238	.268	.311	.111	.116	.138
European countries United States Canada and Japan Argentina, Australia, Brazil,	.014 .048 .000	.016 .045 .000	.015 .044 .000	.021 .164 .001	.019 .148 .001	.018 .138 .001	.077 .055 .014	.059 .046 .011	.057 .045 .011
Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel,	.093	.085	.083	.063	.051	.048	.161	.201	.196
Morocco, Tunisia, and Turkey Rest of world	.137 .200	.145 .206	.141 .200	.388 .060	.373 .063	.353 .059	.079 .095	.073 .094	.071 .092
			regetables C 054)	6		Pr		vegetabl C 055)	es
		1	986 impo	rt share			19	86 impor	t share
	1977 import share	en	efore large- nent	Afte enlarg men	je-	1977 import share	enla	ore arge- ent	After enlarge- ment
					Share ¹				
European Community Other Western Europe ² Spain, Greece, and Portugal	0.489 .009 .127		.470 .007 .121	0.459 .00 .146	7	0.519 .005 .158	.0	525 004 69	0.499 .004 .210
Centrally planned East European countries United States Canada and Japan Argentina, Australia, Brazil,	.033 .032 .015		.027 .030 .013	.026 .029 .013	9	.044 .056 .010	.0	057 053 007	.055 .050 .006
Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morroco,	.027		.027	.026	6	.006	.0	007	.006
Tunisia, and Turkey Rest of world	.099 .169		.088 .217	.086 .21		.066 .134)84)95	.080 .090

¹Share based on 1.0.

²Excludes Spain, Greece, and Portugal.

Table 25—1986 projected changes in geographical origins of EC imports of fruit and vegetable products¹

	Commodity and SITC code					
Country or region	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)	
			1,000 dollars (1	977)		
Projected changes due only to income						
and export supply effects: European Community	270,684	7,724	384,647	821,134	508,835	
Other Western Europe ²	758	128	29,337	7,468	3,750	
Spain, Greece, and Portugal	125,480	5,614	127,336	206,656	167,293	
Centrally planned East	0, .00	0,0	,,,,,,	=00,000	, =	
European countries	17,820	767	40,439	32,471	67,419	
United States	28,340	4,430	38,100	52,273	46,670	
Canada and Japan	58	31	8,924	20,869	3,380	
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	41,966	– 287	225,980	51,101	6,757	
Algeria, Cyprus, Egypt, Iran, Iraq,	41,500	207	220,000	31,101	0,101	
Israel, Morocco, Tunisia,						
and Turkey	145,630	18,205	70,764	133,889	97,954	
Rest of world	188,529	4,236	99,225	527,652	55,473	
World ³	819,262	40,849	1,054,748	1,853,509	957,525	
Projected changes due only to EC						
enlargement:						
European Community	- 36,344	- 1,368	- 12,139	- 33,184	- 23,107	
Other Western Europe ²	- 317	- 24	- 861	- 110	- 204	
Spain, Greece, and Portugal	132,618	19,034	62,672	144,630	106,642	
Centrally planned East European countries	- 1,933	– 377	- 1,999	- 1,695	- 2,909	
United States	- 5,462	- 2,598	- 1,835 - 1,835	- 1,729	- 2,827	
Canada and Japan	- 47	<u> </u>	- 429	– 455	– 457	
Argentina, Australia, Brazil, Mexico,						
New Zealand, and South Africa	<i>–</i> 9,713	– 865	– 5,750	– 196	- 464	
Algeria, Cyprus, Egypt, Iran, Iraq,						
Israel, Morocco, Tunisia, and Turkey	- 16,660	- 5,667	- 2,269	- 2,975	- 3,673	
Rest of world	- 23,226	- 5,067 - 1,069	- 2,209 - 3,328	- 10,253	- 6,089	
1.000 0. 110110	20,220	1,000	0,020	. 0,200	5,500	
World ³	38,916	7,055	34,061	94,034	66,910	

¹Assumes that the elasticities of substitution of all regions except EC and OWE are raised to the value of 3. ²Excludes Spain, Greece, and Portugal. ³Figures may not add up because of rounding.

Table 26—Base projection: Trade creation and trade diversion in an enlarged EC in fruit and vegetable products¹

Commodity and SITC code	Trade creation (TC)	Trade diversion (TD)	Net trade creation (TC-TD)
	1,0	000 dollars (1	977)
Fresh fruits (051)	110,554	81,907	28,647
Dried fruits	18,964	15,815	3,149
(052) Processed fruits (053)	53,262	35,742	17,520
Fresh vege- tables (054)	141,539	80,714	60,825
Processed vegetables (055)	85,316	21,605	63,711
Total	409,635	235,783	173,852

¹Assumes that import elasticities of substitution of all regions except EC and OWE are increased to a value of 3.

world for all five products, except for the United States where the base-run price elasticity of export supply was 6.6 and was held at that value.

Such a large export supply response to price is expected to moderate the large price declines forecast in the base run because export supplies would be withheld from the market. Table 29 illustrates this situation. The real export price indexes are all higher by varying amounts (from less than 1 percent for dried fruits to 18 percent for processed fruits) from their base values. Enlargement by itself, just as in the base run, changes these indexes only marginally (with the notable exception again of Spain, Greece, and Portugal). The reason for this effect on prices is, as expected, a fall in world exports (table 30). This table indicates that enlargementinduced total export changes are higher than in the base run. This difference is accounted for largely by the greater response in this simulation of Spanish, Greek, and Portuguese exports to the generally higher export prices they will face after joining the EC.

Table 31 shows that total trade creation will be larger than in the base run whereas total trade diversion will be lower, resulting in a substantial 37-percent improvement in total net trade creation.

Countries other than the EC, Spain, Greece, and Portugal that export large quantities of fruit and vegetable products have generally feared that, after enlargement, further increases in export supplies of the Three will hurt their own exports. This hypothesis was tested; the only difference in this simulation from the base run was that the exogenous yearly growth rates of export supplies (the parameters ϕ_i in the specification of the model) of Spain, Greece, and Portugal were increased by 50 percent from their base values in all product categories. This increase is assumed to occur in every year of the 1977-86 simulation period. Table 32 (as compared with table 15) indicates that the export price decreases expected for all regions are quite small except for Spain, Greece, and Portugal whose export terms of trade drop significantly for all products (the largest decline being 23 percent in processed fruits). In other words, large export supply increases by Spain, Greece, and Portugal cannot be absorbed in any market without large price declines.

If one compares the total export changes in table 33 with the data in table 16, it becomes apparent that although Spanish, Greek, and Portuguese exports increase significantly as expected, the exports of other world-market suppliers do not change appreciably. In fact, the losses in exports incurred by all exporters as a consequence of the enlargement are smaller than the losses incurred in the base run. For the United States, for example, if the figures for total export changes (both trend and enlargement-induced) are added across all products, then the total 1986 projected increase in U.S. exports of fruits and vegetables is \$713 million. This figure compares with \$723 million in the base run, a marginal decrease of 1 percent. However, the net trade creation in the EC induced by the increased excess supplies of Spain, Greece, and Portugal is significantly larger (by 67 percent) than the base-run figure (tables 23 and 34).

Similar results are obtained if, instead of increasing supplies from Spain, Greece, and Portugal, one assumes that enlargement means export subsidies on the Three's exports to countries other than the EC. A simulation was run where a 10-percent export subsidy on all product categories was assumed for exports from Spain, Greece, and Portugal to all destinations other than the EC. (For the EC, of course, the base-run tariff and nontariff reductions are assumed.) In all cases (including Spain, Greece, and Portugal), the enlargement-induced export terms of trade are within 1 percent of their base values.

Table 35 (in comparison with table 16) illustrates that EC-imposed export subsidies on Spanish, Greek, and

Table 27—1986 projected changes in the geographical origin of EC imports of fruit and vegetable products¹

	Commodity and SITC code				
Country or region	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
		1	,000 dollars (1	977)	
Projected changes due only to income					
and export supply effects: European Community Other Western Europe ² Spain, Greece, and Portugal Centrally planned East	264,853 - 845 108,474	13,064 - 212 - 635	364,985 38,150 135,653	751,173 1,994 185,508	523,851 3,210 195,092
European countries United States Canada and Japan	26,643 15,795 - 454	909 2,619 38	11,394 17,104 749	5,769 40,374 10,112	93,551 41,027 - 3,572
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	7,136	- 3,030	356,102	50,566	8,373
and Turkey Rest of world	180,779 222,851	21,447 7,173	61,157 93,317	96,153 764,332	124,788 - 12,246
World ³	825,230	41,796	1,078,608	1,905,976	974,071
Projected changes due only to EC					
enlargement: European Community Other Western Europe ² Spain, Greece, and Portugal	- 63,816 - 577 215,767	- 3,080 - 56 29,109	- 24,396 - 2,219 96,255	- 77,320 - 460 217,583	- 53,761 534 172,597
Centrally planned East European countries United States Canada and Japan	- 4,111 - 11,537 - 80	- 645 - 5,513 - 24	- 3,401 - 4,000 - 792	- 4,053 - 5,544 - 1,537	- 7,561 - 8,445 - 777
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	– 18,515	– 1,590	– 15,987	- 2,385	- 1,515
and Turkey Rest of world	33,964 - 49,986	- 10,419 - 2,430	- 4,371 - 7,566	- 8,473 - 35,899	- 9,517 - 12,034
World ³	33,182	5,350	33,522	81,912	78,452

¹Assumes that the EC import elasticity of substitution is double its base value. ²Excludes Spain, Greece, and Portugal. ³Figures may not add up because of rounding.

Table 28—Base projection: Trade creation and trade diversion in an enlarged EC in fruit and vegetable products¹

Commodity and SITC code	Trade creation (TC)	Trade diversion (TD)	Net trade creation (TC-TD)
	1,0	000 dollars (1	977)
Fresh fruits	164,189	141,159	23,030
(051) Dried fruits	26,812	25,459	1,353
(052) Processed	73,704	56,179	17,525
fruits (053) Fresh vege-	167,151	116,920	50,231
tables (054) Processed vegetables (055)	120,102	44,697	75,405
Total	551,959	384,414	167,545

¹Assumes that the import elasticity of substitution is double its base value.

Portuguese exports after enlargement lead to substantially higher total exports by these three countries. However, these export increases are accompanied by only small export decreases of other exporting regions. For example, the U.S. enlargement-induced decreases of total exports of fruit and vegetable products are \$32 million compared with \$29 million in the base run, a marginal change due to a very small fraction of total anticipated U.S. export growth in these products attributable only to trend factors.

Export subsidies on Spanish, Greek, and Portuguese exports of fruits and vegetables lead to lower trade creation as well as to lower trade diversion (table 36). This result is to be expected as the export subsidies mean that the EC market will not be the only one that offers expanded opportunities for exports from the Three. The total net trade creation is again larger than the base run by 26 percent.

The above sensitivity experiments lead to the conclusion that the base-run projections are fairly robust with respect to prices and the basic trade flow changes. Furthermore, the projection of the total potential benefits of net trade creation likely to accrue within an

enlarged EC is most probably underestimated by the base run as all sensitivity runs indicated a larger potential net trade creation.

EC Import Patterns for Individual Commodities

The previous analysis has examined the world trade patterns and export prices likely to arise out of trend factors as well as the effect of EC enlargement on aggregated categories of fruit and vegetable products.¹⁷ In this section, more detailed analysis is presented for important commodities exported from the United States to the EC. My objective is to examine the effects of EC enlargement on the trade flows of individual commodities. The major finding is that trade liberalization in fruits and vegetables within the EC after enlargement will have only a miniscule impact on U.S. exports to the EC.

Model for EC Trade Patterns

The empirical model used for the commodity projections consists basically of the demand component of the more complete and closed model developed earlier in this report.

Equations (10), (16), and (18) are repeated here for reference:

$$\widetilde{X}_{ik} = \widetilde{m}_k - \sigma_k (1 - S_{iko}) \widetilde{p}_{ik}^m + \sum_{\substack{j=1\\j \neq i}}^r \sigma_k S_{jko} \widetilde{p}_{jk}^m \quad (10)$$

$$\widetilde{\mathbf{m}}_{k} = \theta_{k} \widetilde{\mathbf{Y}}_{k} - \epsilon_{k} \widetilde{\mathbf{p}}_{k}^{m}. \tag{16}$$

$$\widetilde{p}_{k}^{m} = \sum_{i=1}^{r} S_{iko} \widetilde{p}_{ik}^{m} \qquad k = 1, ..., n$$
 (18)

The first equation expresses the percentage change in the share of exporter i in the kth import market for some commodity as a function of the overall percentage growth in the import market m_k and the percentage changes in the various c.i.f. prices of competing exporters, \widetilde{p}_{jk} . The second equation expresses the percentage growth of the import market as a function of the growth of real income of the importing country and the change of an index of the real price of the imported good from all sources. Equation (18), in turn, expresses

¹⁷See (23) for a detailed discussion of the structural aspects of the EC's trade in oranges, grapes, raisins, almonds, processed peaches, and processed tomatoes.

Table 29—1986 projected indexes of export prices of fruit and vegetable products¹

	Commodity and SITC code					
Country or region	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)	
			1977 = 100)		
Projected changes due only to income						
and export supply effects: European Community	97.2	89.2	92.5	98.2	95.6	
Other Western Europe ²	105.4	91.0	82.5	107.8	98.9	
Spain, Greece, and Portugal	97.0	103.5	89.5	98.8	93.2	
Centrally planned East European countries	88.5	100.0	104.3	107.2	85.2	
United States	96.3	104.3	97.8	98.5	95.8	
Canada and Japan	110.7	99.0	104.0	103.7	112.9	
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq,	101.4	107.6	80.2	96.0	92.5	
Israel, Morocco, Tunisia, and Turkey	91.8	99.0	94.9	102.0	86.7	
Rest of world	93.0	95.1	91.9	84.1	109.2	
World	95.4	100.8	90.7	95.7	97.4	
Projected changes due only to EC						
enlargement:	07.0	00.0	00.0	00.0	05.0	
European Community Other Western Europe ²	97.0 105.2	89.0 90.8	92.3 82.4	98.2 107.2	95.3 98.6	
Spain, Greece, and Portugal	98.9	105.1	92.1	107.2	95.2	
Centrally planned East	00.0	100.1	02.1	102.2	00.2	
European countries	88.4	99.8	104.2	107.1	85.0	
United States	96.1	104.0	97.7	98.3	95.6	
Canada and Japan	110.6	98.8	103.9	103.4	112.8	
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	101.2	107.3	80.0	95.5	92.5	
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,						
and Turkey	91.6	98.5	94.7	101.6	86.5	
Rest of world	92.8	94.8	91.7	83.9	109.1	
World	95.5	100.0	90.8	96.0	97.6	

¹Assumes that all regions' export-supply price elasticities are increased to the value of 6. Excludes the United States. ²Excludes Spain, Greece, and Portugal.

Table 30-1986 projected changes in total exports of fruit and vegetable products¹

	Com	modity and SI	TC code	
Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
		1,000 dollars (1	977)	
360 943	19 954	395 780	981 922	557,566
	453			8,316
189,196	31,124	141,318	239,900	302,550
48.057	4 840	52 890	62 868	77,887
				106,197
12,518	624	25,972	49,259	23,774
100.077	40.070	400.000		= 4.004
190,977	16,676	426,893	258,677	51,891
319 529	45 945	78 752	181 108	94,749
935,615	35,498	261,536	798,432	205,501
2,426,530	190,727	1,578,013	2,809,981	1,428,431
				- 23,033
				- 508 07 000
135,162	19,808	62,739	159,931	97,863
- 1.636	- 381	- 2.449	- 1.563	- 2,727
			- 8,661	-4,244
- 90	- 23	- 448	- 2,786	- 476
0.000		10.001	0.4.050	50
- 9,938	- 1,430	- 13,801	- 24,858	56
				- 3,692
- 34,296	- 1,636	- 6,999	– 19,602	- 4,552
35,085	4,018	20,600	82,977	58,686
	fruits (051) 360,943 1,736 189,196 48,057 367,959 12,518 190,977 319,529 935,615 2,426,530 - 26,458 - 345 135,162 - 1,636 - 11,804 - 90 - 9,938 - 15,510 - 34,296	Fresh fruits (051) 360,943	Fresh fruits fruits (051) 1,000 dollars (1 360,943	fruits (051) fruits (052) fruits (053) vegetables (054) 1,000 dollars (1977) 360,943 19,954 395,780 981,922 1,736 453 53,093 11,684 189,196 31,124 141,318 239,900 48,057 4,840 52,890 62,868 367,959 35,614 141,779 226,131 12,518 624 25,972 49,259 190,977 16,676 426,893 258,677 319,529 45,945 78,752 181,108 935,615 35,498 261,536 798,432 2,426,530 190,727 1,578,013 2,809,981 - 26,458 - 645 - 20 - 856 - 1,781 135,162 19,808 62,739 159,931 - 1,636 - 381 - 2,449 - 1,563 - 11,804 - 3,914 - 2,658 - 8,661 - 90 - 23 - 448 - 2,786 - 9,938 - 1,430 - 13,801 - 24,858 - 15,510 - 7,741 - 2,901 - 12,064 - 34,296 - 1,636 - 6,999 - 19,602

¹Assumes that all regions' export-supply price elasticities are increased to the value of 6. Excludes the United States. ²Excludes Spain, Greece, and Portugal. ³Figures may not add up because of rounding.

Table 31—Trade creation and trade diversion in an enlarged EC in fruit and vegetable products¹

Commodity and SITC code	Trade creation (TC)	Trade diversion (TD)	Net trade creation (TC-TD)
	,,,	,	,
Fresh fruits	115,426	83,203	32,223
(051) Dried fruits (052)	20,680	16,646	4,034
Processed fruits (053)	53,587	33,449	20,138
Fresh vege- tables (054)	161,170	80,753	80,417
Processed vegetables (055)	84,382	20,786	63,596
Total	435,244	234,837	200,407

¹Assumes that all regions' export supply price elasticities are increased to the value of 6.

the percentage change of the real import price index in terms of the percentage changes in the c.i.f. prices of the individual exporters.

The trade model discussed earlier was closed by the specification of export functions for all suppliers. Although export supply functions are not hard to estimate for individual commodities (compared with estimates of supply functions of aggregate commodities), the major stumbling block encountered in trying to specify closed-trade models for individual commodities is that origin-destination data for most countries are not available. EC members are the only countries that report extremely detailed origin-destination trade statistics disaggregated to the individual commodity level. Therefore, I decided to follow a simpler route. Because the projections are supposed to analyze a longrun comparative static situation in trade patterns that is presumed to arise out of a preferential trade liberalization, one can reasonably assume that the export supply curves of the individual exporters in each specific commodity are infinitely price elastic. In other words, trade patterns are determined solely by demand factors. In fact, this assumption was made in all previous studies that have analyzed individual country, longrun static trade patterns.

Given the assumption of infinitely elastic import supply curves, import quantities are determined by equations (10), (16), and (18). The exogenous variables are the growth rates of real income and the percentage changes in c.i.f. prices.

Empirical Specifications

A model like the one just discussed was specified for each of the EC countries and each of six commodities: fresh oranges, fresh table grapes, sweet almonds, raisins, processed peaches, and processed tomatoes. These commodities were chosen because there is a substantial trade flow of U.S. exports toward the EC for each and there are also substantial exports to the EC from Spain, Greece, and Portugal. Hence, these products are likely to be affected by EC enlargement. Other products are exported in significant amounts by the United States to the EC, such as walnuts and prunes. However, these products are not traded between Spain, Greece, and Portugal and the EC; hence, their trade pattern is not likely to be influenced by enlargement. ¹⁸

For each commodity, detailed annual data were collected for the value of imports of each EC country by origin in 1979. The source for these data was the NIMEXE trade statistics published by the EC. Data were also collected for 1978, but I decided to use 1979 import trade patterns as a base rather than average the 2 years, because not only do the overall trade patterns (shares) not vary greatly in these years, but also because of substantial inflation between 1978 and 1979, the value data are not comparable.

The values for the individual parameters of the models for each EC country—namely, the elasticities of substitution σ_k , the income elasticities of import demand θ_k , and the price elasticities of import demand ϵ_k —were obtained from tables 5, 7, and 8, respectively. In other words, the parameters for oranges, table grapes, and almonds were obtained from the fresh fruit columns; the parameters for raisins, from the dried fruit columns; the parameters for processed peaches, from the processed fruit columns; and the parameters for processed tomatoes, from the processed vegetable columns in these tables.

Yearly income growth rates for individual EC countries were obtained from the data compiled by Kost (19).

¹⁸This statement is not strictly correct because there might be intercommodity substitution among the various products. These effects are second-order and small and have been neglected in this study because the main objective is to assess the overall import demand of several fruit and vegetable categories, but not the substitution by importers among suppliers in individual products.

Table 32—1986 projected indexes of export prices of fruit and vegetable products¹

		Com	modity and SI	TC code	
Country or region	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
			1977 = 100)	
Projected changes due only to income					
and export supply effects: European Community	87.8	78.5	80.9	95.1	88.7
Other Western Europe ²	107.7	82.3	62.2	115.8	96.0
Spain, Greece, and Portugal	84.6	107.6	57.6	88.9	70.5
Centrally planned East European countries	72.9	99.6	105.1	115.4	68.6
United States	95.6	104.2	96.2	97.6	95.3
Canada and Japan	122.5	97.6	105.7	106.9	128.4
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	100.8	116.5	57.9	90.2	83.0
Algeria, Cyprus, Egypt, Iran, Iraq,			0.10	00.2	33.3
Israel, Morocco, Tunisia, and Turkey	79.9	97.7	85.4	103.5	71.6
Rest of world	83.2	89.1	79.8	65.8	119.2
World	86.8	100.1	74.9	88.2	88.3
	00.0			33.2	00.0
Projected changes due only to EC enlargement:					
European Community	87.3	78.2	80.6	95.0	88.2
Other Western Europe ²	72.7	107.3	62.1	114.9	95.5
Spain, Greece, and Portugal Centrally planned East	88.6	111.7	61.3	95.7	73.8
European countries	72.7	98.9	104.7	115.3	68.3
United States	95.4	103.9	96.2	97.5	95.1
Canada and Japan Argentina, Australia, Brazil, Mexico,	122.4	97.3	105.6	106.4	128.3
New Zealand, and South Africa	100.4	115.9	57.7	89.4	83.2
Algeria, Cyprus, Egypt, Iran, Iraq,					
Israel, Morocco, Tunisia, and Turkey	79.6	96.6	85.0	103.0	71.2
Rest of world	82.9	88.6	79.6	65.5	119.0
World	07.0	100.7	74.0	88.8	88.5
VVOIIU	87.0	100.7	74.9	00.8	0.00

¹Assumes that the growth rate of Spanish, Greek, and Portuguese exports of all products is 50 percent higher than in the base run.
²Excludes Spain, Greece, and Portugal.

Table 33—1986 projected changes in total exports of fruit and vegetable products¹

	_	Com	modity and SI	TC code	
Country or region	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
		1,0	00 U.S. dollars	(1977)	
Projected changes due only to income and export supply effects:					
European Community Other Western Europe ² Spain, Greece, and Portugal	408,276 - 2,588 250,014	30,981 683 23,414	424,757 79,585 256,804	995,737 4,317 308,440	609,618 7,947 523,048
Centrally planned East European countries United States Canada and Japan Argentina, Australia, Brazil, Mexico,	69,007 315,820 2,037	4,610 34,454 642	20,688 100,485 15,774	28,464 188,238 37,009	111,922 97,983 6,928
New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	133,830	7,056	661,567	284,982	63,287
and Turkey Rest of world	406,201 1,144,473	48,428 42,456	79,806 303,346	155,123 1,175,495	129,351 86,025
World ³	2,727,070	192,725	1,942,812	3,177,805	1,636,109
Projected changes due only to EC enlargement:					
European Community Other Western Europe ² Spain, Greece, and Portugal	- 15,980 - 198 110,708	- 512 - 13 15,143	- 8,124 - 500 61,811	- 1,155 - 710 126,863	- 15,108 - 254 91,040
Centrally planned East European countries United States Canada and Japan	- 1,139 - 9,702 - 75	- 329 - 3,440 - 14	- 1,456 - 1,939 - 254	- 393 - 6,007 - 1,456	- 1,917 - 3,062 - 92
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia,	- 6,587	– 788	- 10,333	- 13,868	671
and Turkey Rest of world	- 10,834 - 23,785	- 5,324 - 1,185	- 1,884 - 4,358	- 6,572 - 14,799	- 2,715 - 1,526
World ³	42,409	3,539	32,963	81,904	67,036

¹Assumes that the growth rate of Spanish, Greek, and Portuguese exports of all products is 50 percent higher than in the base run.

²Excludes Spain, Greece, and Portugal.

³Figures may not add up because of rounding.

Table 34—Trade creation and trade diversion in an enlarged EC in fruit and vegetable products¹

Commodity and SITC code	Trade creation (TC)	Trade diversion (TD)	Net trade creation (TC-TD)
	1,0	000 dollars (1	977)
Fresh fruits	110,851	72,098	38,753
(051) Dried fruits	17,729	13,774	3,955
(052) Processed	63,836	28,975	34,861
fruits (053) Fresh vege-	142,640	62,082	80,558
tables (054) Processed vegetables (055)	104,117	18,013	86,104
Total	439,173	194,941	244,232

¹Assumes that the growth rate of Spanish, Greek, and Portuguese exports of all products is 50 percent higher than in the base run.

The most arduous task was estimating the price equivalent of the current trade barriers that the EC imposed on imports of the above six commodities from Spain, Greece, and Portugal. There are different EC tariffs for each commodity depending not only on the country of origin, but also and more important, on the season. Very detailed data on the seasonal geographic EC pattern of trade in each commodity and differential tariff rates for each season were obtained from the GATT (General Agreement on Tariffs and Trade) tapes made available by the U.S. Department of Agriculture. The latest year for which detailed trade and tariff data were available on the tape was 1976. For each of the Three and for each of the six commodities, I obtained an average yearly tariff rate for the EC by weighting the individual season and country-specific tariff rates in 1976 by the proportions of the total yearly supplies of each exporter's exporting to the EC in each season. To obtain a price equivalent for the nontariff barriers, I weighted the figures for the nontariff barriers (mainly, reference prices) compiled by Sampson and Yeats (27) by the proportion of the yearly supplies of every commodity by each exporter to the EC that is marketed during the season in which reference prices apply. I then obtained the price equivalent of the combined

yearly tariff and nontariff barriers of the EC toward Spain, Greece, and Portugal in each commodity by aggregating the two figures (that is, six commodities times three exporting countries). Finally, the percentage reductions in the c.i.f. import prices assumed for the simulations were obtained by the standard formula dt/(1+t) where t is the average total tariff rate computed by the method outlined above and dt=-t (namely, complete abolition of all tariff and nontariff barriers).

Empirical Results

Tables 37 through 42 present the base projections for the six individual commodities. These results represent the aggregation of the separate results obtained for each EC-member country's import pattern. A detailed exposition of all individual country results is not given. (There are eight EC member countries, as Luxembourg is lumped with Belgium, and six commodities, yielding a total of 36 tables like the ones presented here).

The projections are for 1986, and they isolate two effects as before: the trade effects of income growth and the tariff effects of enlargement. For all commodities and almost all exporting countries except Spain, Greece, and Portugal, the expected positive change in exports to the EC due to trend factors is much larger than the decline in exports due to the intercountry substitution projected to occur as a consequence of enlargement. In percentage terms, this trade diversion to the trade flow of countries other than the Three rarely exceeds 4 percent of the 1986 projected total flows. Processed peaches represent a notable exception; the large anticipated tariff and nontariff reductions toward imports, mainly from Greece, are projected to cause a 10-percent decline in U.S. exports to the EC and large declines in the exports of all suppliers to the EC except Spain and Greece.

The effects on oranges serve as an interesting illustration. Although the decline in the yearly price equivalent of EC tariff and nontariff barriers toward Spain (the largest supplier) is 30 percent, increased imports from Spain are only 10 percent of the 1986 projected nonenlargement Spanish-EC trade flow. This increase translates into \$34 million (1979 prices) of additional exports of oranges from Spain. Total EC imports of oranges are projected to increase by \$12 million, leaving \$22 million of enlargement-induced trade diversion that is distributed fairly evenly among all EC suppliers. The decline in U.S. exports of oranges to all EC countries is projected to be less than \$1 million, a trivial amount.

Table 35—1986 projected changes in total exports of fruit and vegetable products¹

		Com	modity and SI	TC code	
Country or region	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
			1,000 dollars (1	977)	
Projected changes due only to income					
and export supply effects: European Community	419,437	31,030	435,487	1,010,075	627,882
Other Western Europe ²	- 2,367	684	81,071	4,588	8,385
Spain, Greece, and Portugal	188,987	22,432	173,037	241,457	369,672
Centrally planned East European countries	69,975	4,612	22,525	29,981	114,423
United States	319,415	34,607	104,431	190,375	103,548
Canada and Japan	2,095	643	16,315	37,337	8,223
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	137,916	7,093	669,392	286,916	66,695
Algeria, Cyprus, Egypt, Iran, Iraq,			,	•	,
Israel, Morocco, Tunisia, and Turkey	413,555	48,579	81,810	157,015	132,259
Rest of world	1,153,619	42,494	307,924	1,180,028	97,230
World ³	2,702,632	192,175	1,891,992	3,137,772	1,528,317
Projected changes due only to EC					
enlargement:					
European Community Other Western Europe ²	- 22,470 - 356	- 890 - 25	- 9,205 - 1,016	- 9,868 - 864	- 17,438 - 410
Spain, Greece, and Portugal	137,593	20,846	60,335	138,393	111,177
Centrally planned East	•	,	,	,	,
European countries United States	1,373	- 217	- 1,598	- 1,479	- 2,628
Canada and Japan	- 12,031 - 133	- 4,341 - 22	- 2,869 - 361	- 7,589 1,564	- 4,855 - 571
Argentina, Australia, Brazil, Mexico,				•	
New Zealand, and South Africa Algeria, Cyprus, Egypt, Iran, Iraq,	- 9,030	– 1,008	- 12,224	- 15,515	- 1,164
Israel, Morocco, Tunisia,					
and Turkey	- 16,396	- 5,508	- 2,050	-7,114	- 3,209
Rest of world	– 29,586	– 1,374	- 5,414	- 17,020	- 5,244
World ³	48,985	7,461	25,597	77,374	75,658

¹Assumes that Spanish, Greek, and Portuguese exports of fruit and vegetable products enjoy 10-percent export subsidies to all destinations (except the EC) after enlargement.

²Excludes Spain, Greece, and Portugal.

³Figures may not add up because of rounding.

Table 36—Trade creation and trade diversion in an enlarged EC in fruit and vegetable products¹

Commodity and SITC code	Trade creation (TC)	creation diversion					
	1,0	000 dollars (1	977)				
Fresh fruits (051)	98,964	67,033	31,931				
Dried fruits	16,560	13,009	3,551				
(052) Processed	48,190	28,623	19,567				
fruits (053) Fresh vege-	128,013	60,381	67,632				
tables (054) Processed vegetables (055)	77,247	15,363	61,884				
Total	368,974	184,408	184,566				

¹Assumes that Spanish, Greek, and Portuguese exports of all products enjoy 10-percent export subsidies to all destinations (except the EC) after enlargement.

All other commodities are similarly affected. In fact, the trade diversion effects for all six commodities on the United States total \$3.3 million (in 1979 prices), which represents the total decline in U.S. exports to the EC of these fruit and vegetable products. One can calculate the total decline of U.S. exports of the five three-digit categories of fruit and vegetable products to the EC that are projected to occur because of enlargement by adding the top figures in the last five columns of table 21—that is, \$14.3 million. Given the aggregated nature of the earlier projections and the inclusion of many more commodities than those analyzed above, the compatibility of the two figures derived from quite different data sources is adequate.

The major conclusion is that total EC imports (from all sources) of these six products will expand, and the expansion will come about because of significant preferential trade liberalization between the EC and three of its most significant suppliers of fruits and vegetables: Spain, Greece, and Portugal. The geographical substitution effects on EC imports will be rather minor and fairly evenly distributed across all current EC suppliers of fruits and vegetables.

Implications

Current trends in export availabilities of fruit and vegetable products, combined with current forecasts of income growth over the next decade, in the absence of enlargement, suggest substantial deterioration in export prices of these products in the medium run. The only exception is dried fruits, where the projection for world export price is only slightly above the 1977 level. EC enlargement will improve export prices of fruits and vegetables in Spain, Greece, and Portugal and slightly reduce export prices of other world exporters. When weighted properly, these effects point toward slight increases in world prices of fruit and vegetable products over those forecasted without EC enlargement.

World trade patterns, as represented by export and import shares, will not change much in the next decade. EC enlargement will increase the share of Spanish, Greek, and Portuguese exports to the EC at the expense of all other EC suppliers.

EC enlargement will cause substantial increases in the net exports of fruit and vegetable products of Spain, Greece, and Portugal. Furthermore, it will slightly reduce net exports of all other exporting regions. However, in some products (notably processed vegetables), EC enlargement will slightly increase net exports of most other exporting regions.

As expected, EC enlargement will substantially change the origin of EC imports of fruits and vegetables. However, the declines in exports to the EC of exporting regions other than the Three are much smaller than the increases of exports by the Three countries to the EC.

EC enlargement is projected to benefit the enlarged Community of 12 with regard to trade in fruit and vegetable products. Trade creation between the former EC-9 and Spain, Greece, and Portugal is estimated at about \$400 million (constant U.S. dollars, 1977), whereas trade diversion is estimated at about \$250 million (constant dollars). These gains will not be at the expense of any single country or region. The costs of trade diversion will be borne rather uniformly across most exporters.

U.S. exports to the EC of all fruit and vegetable products, except possibly processed peaches, are expected to decline only minimally from their nonenlargement projected total.

The widespread concern generated by the prospect of EC enlargement to include Spain, Greece, and Portugal is largely unjustified regarding fruits and vegetables. The detrimental effects on the international markets for

these products will come mostly from general trends in world supplies and incomes. EC enlargement will only marginally affect the general pattern of international trade in these products and will benefit the enlarged EC.

Table 37—Projections of 1986 import trade pattern for oranges for the EC from the 1979 base trade pattern

Country of origin	Base- year	Base import	9	es due to e growth	Tariff and non- tariff barrier abolition	Changes tariff et of enlarg	fects	1986 final imports	1986 import
•		share	Proportion	Amount	(import price)	Proportion	Amount		share
	1,000 dollars	Share ¹	Percent	1,000 dollars	Perce	ent	1,000	dollars	Share ¹
France	5,050	0.007	17.3	962	0	- 4.6	- 297	6,215	0.007
Belgium-Luxembourg	6,430	.008	18.7	1,200	0	- 5.0	- 384	7,246	.008
Netherlands	20,163	.026	13.3	2,674	0	- 5.1	-1,160	21,677	.024
Germany	3,857	.005	19.2	742	0	- 4.4	- 204	4,395	.005
Italy	17,079	.022	14.4	2,462	0	- 3.5	<i>–</i> 679	18,862	.021
United Kingdom	8,078	011	36.0	2,906	0	-0.4	- 39	10,945	.012
Ireland	583	.001	1.3	8	0	-2.7	- 16	574	.001
Denmark	138	.000	21.2	29	0	- 4.5	8	160	.000
Spain	310,027	.404	16.5	51,006	- 29.8	9.4	34,009	395,041	.441
Greece	1,866	.002	11.2	209	- 18.1	6.7	138	2,213	.002
Morocco	74,980	.098	16.5	12,367	0	- 5.0	- 4,387	82,960	.093
Algeria	880	.001	15.2	134	0	- 4.5	- 46	969	.001
Tunisia	9,638	.013	17.8	1,720	0	-7.4	- 839	10,519	.Q12
Egypt	1,006	.001	21.2	214	0	- 4.7	- 57	1,163	.001
Mozambique	446	.001	8.4	38	0	- 4.9	- 24	459	.001
South Africa	105,859	.138	12.0	12,694	0	- 4.6	- 5,432	113,121	.126
Swaziland	2,457	.003	10.4	254	0	- 4.8	- 129	2,582	.003
United States	12,811	.017	23.4	2,999	0	- 5.3	- 849	14,960	.017
Honduras	298	000	26.2	78	0	-4.3	- 16	359	.000
Cuba	1,810	.002	19.5	353	0	- 4.1	- 89	2,074	.002
Brazil	17,750	.023	19.0	3,369	0	- 4.1	- 861	20,257	.023
Uruguay	3,709	.005	24.7	916	0	- 4.3	- 199	4,426	.005
Argentina	4,681	.006	23.1	1,080	0	- 5.4	- 308	5,452	.006
Cyprus	17,440	.023	9.0	1,571	0	-3.4	- 637	18,375	.021
Israel	139,358	.181	11.0	15,323	0	-3.4	-5,184	149,497	.167
Australia	1,293	.002	22.3	288	0	-6.0	- 95	1,486	.002
Total	768,184	1.000	15.0	115,595	2	1.4	12,210	895,990	1.000

¹Share based on 1.0.

²Not applicable.

Table 38—Projections of 1986 import trade pattern for the EC from the 1979 base trade pattern

Country of origin	Base- year	Base import	Changes due to income growth		Tariff and non- tariff barrier abolition	Changes due to tariff effects of enlargement		1986 final	1986 import
	imports	share	Proportion	Amount	(import price)	Proportion	Amount	imports	share
	1,000 dollars	Share ¹	Percent	1,000 dollars	Percent 1,0		1,000	dollars	Share ¹
France	20,076	0.054	16.5	3,309	0	- 1.0	- 231	23,154	0.055
Belgium-Luxembourg	2,701	.007	16.4	443	0	- 1.5	- 49	3,095	.007
Netherlands	5,370	.014	10.6	569	0	- 1.8	- 105	5,834	.014
Germany	6,404	.017	20.5	1,313	0	- 2.2	- 170	7,547	.018
Italy	202,956	.545	14.4	29,166	0	- 1.1	- 2,533	229,589	.542
United Kingdom	1,601	.004	34.5	553	0	- 2.8	- 61	2,093	.005
Spain	49,800	.134	9.9	4,955	- 18.4	9.8	5,347	60,102	.142
Greece	12,035	.032	14.3	1,721	- 23.7	13.6	1,872	15,628	.037
Turkey	1,239	.003	13.1	162	0	7	– 10	1,391	.003
Bulgaria	199	.001	12.9	26	0	6	- 1	223	.001
South Africa	48,435	.130	11.2	5,444	0	- 1.6	- 857	53,022	.125
United States	2,386	.006	8.4	200	0	- 2.7	- 70	2,517	.006
Colombia	156	.000	19.7	31	0	- 1.4	- 3	184	.000
Brazil	192	.001	20.7	40	0	- 1.4	- 3	228	.001
Chile	3,429	.009	17.6	603	0	- 3.4	- 136	3,896	.009
Argentina	149	.000	11.0	16	0	- 2.5	- 4	162	.000
Cyprus	12,546	.034	1.9	237	0	- 4.4	- 557	12,226	.029
Israel	2,665	.007	3.9	105	0	- 4.0	- 110	2,660	.006
Total	372,341	1.000	13.1	48,894	2	1.6	2,319	423,553	1.000

¹Share based on 1.0. ²Not applicable.

Table 39—Projections of 1986 import trade pattern for sweet almonds for the EC from the 1979 base trade pattern

Country of origin	Base-	Base	Changes due to income growth		Tariff and non- tariff barrier	tariff et	Changes due to tariff effects		1986
	year imports	import share	Proportion	Amount	abolition (import price)	of enlargement Proportion Amount		final imports	import share
	1,000 dollars	Share ¹	Percent	1,000 dollars				1,000 dollars	
France	1,980	0.007	16.5	328	0	-0.8	- 20	2,288	0.007
Netherlands	828	.003	19.0	158	0	- 1.2	- 11	974	.003
Germany	11,711	.039	20.8	2,435	0	- 1.1	- 154	13,992	.041
Italy	24,708	.083	15.9	3,919	0	6	- 183	28,444	.084
United Kingdom	2,370	.008	32.6	772	0	3	– 10	3,133	.009
Switzerland	0	.000	0	0	0	0	0	0	.000
Portugal	4,660	.016	12.5	581	-6.5	3.7	193	5,434	.016
Spain	67,508	.227	15.4	10,376	-6.5	3.3	2,569	80,453	.236
Morocco	5,842	.020	17.5	1,024	0	- 1.1	– 73	6,793	.020
Tunisia	7,802	.026	17.8	1,386	0	- 1.1	- 104	9,084	.027
United States	163,500	.550	12.5	20,413	0	6	- 1,194	182,718	.537
Cyprus	573	.002	6.2	36	0	7	_ 4	604	.002
Israel	3,011	.010	14.2	427	0	- 1.0	- 33	3,405	.010
Rest of world	2,625	.009	16.7	440	Ö	- 1.9	- 58	3,007	.009
Total	297,118	1.000	14.2	42,294	2	.3	916	340,328	1.000

Table 40—Projections of 1986 import trade pattern for table grapes for raisins for the EC from the 1979 base trade pattern

Country of origin	Base- Ba year imp		income growth		Tariff and non- tariff barrier abolition	Changes due to tariff effects of enlargement			1986 import
	imports	share	Proportion	Amount	(import price)	Proportion	Amount	imports	share
	1,000 dollars	Share ¹	Percent	1,000 dollars	Percent		1,000 dollars		Share ¹
France	370	0.001	12.0	44	0	- 0	-0	415	0.001
Netherlands	1,645	.005	12.9	213	0	4	- 1	1,857	.005
Germany	906	.003	– 1.6	- 14	0	1	-0	892	.002
United Kingdom	1,541	.005	11.6	179	0	2	- 0	1,720	.005
Ireland	184	.000	8.2	12	0	0	-0	160	.000
Spain	784	.002	19.0	149	- 3.8	5.2	49	982	.003
Greece	126,720	.372	9.5	12,089	0	1	- 8	138,801	.371
Turkey	97,475	.286	10.0	9,737	0	1	– 10	107,202	.287
South Africa	14,308	.042	8.8	1,256	0	0	- 0	15,563	.042
United States	19,337	.057	5.8	1,113	0	1	- 2	20,447	.055
Cyprus	928	.003	8.6	79	0	0	- 0	1,008	.003
Iran	37,940	.111	11.5	4,366	0	1	- 3	42,302	.113
Afghanistan	16,798	.049	7.9	1,322	0	0	- 1	18,119	.048
Australia	19,738	.058	11.8	2,324	0	- .1	- 2	22,060	.059
Rest of world	2,091	.006	9.5	199	0	1	- 2	2,290	.006
Total	340,729	1.000	9.7	33,069	2	.1	20	373,817	1.000

¹Share based on 1.0.

²Not applicable.

¹Share based on 1.0.

²Not applicable.

Table 41—Projections of 1986 import trade pattern for processed peaches for the EC from the 1979 base trade pattern

Country of origin	Base- year	Base import	income growth		Tariff and non- tariff barrier abolition	Changes due to tariff effects of enlargement		1986 final	1986 import
	imports	share	Proportion	Amount	(import price)	Proportion	Amount	imports	share
	1,000 dollars	Share ¹	Percent	1,000 dollars	Percent		1,000 dollars		Share ¹
Germany	2,030	0.016	37.2	755	0	- 12.7	- 354	2,432	0.013
France	2,298	.018	55.8	1,281	0	-9.4	- 336	3,243	.017
Italy	19,060	.146	35.3	6,732	0	-7.6	-1,956	23,835	.126
Netherlands	448	.003	53.7	241	0	- 1.6	- 11	678	.004
Spain	171	.001	12.6	22	– 37	19.6	38	231	.001
United Kingdom	280	.002	49.9	140	0	- 8.3	- 35	385	.002
Greece	39,276	.302	48.8	19,153	- 37	33.9	19,829	78,258	.414
Bulgaria	384	.003	52.8	203	0	11.9	- 70	517	.003
South Africa	50,894	.391	23.6	12,013	0	- 4.9	-3,093	59,814	.317
United States	7,885	.061	54.3	4,280	0	- 9.8	-1,189	10,976	.058
Australia	6,287	.048	16.0	1,005	0	- 5.1	- 371	6,921	.037
Rest of world	1,352	.010	44.2	553	0	- 8.9	- 160	1,645	.009
Total	130,265	1.000	35.6	46,377	2	7.0	12,292	188,934	1.000

Table 42—Projections of 1986 import trade pattern for processed tomatoes for the EC from the 1979 base trade pattern

Country of origin	Base- year	Base import		es due to e growth	Tariff and non- tariff barrier abolition	Changes tariff e of enlarg	ffects	1986 final	1986 import
	imports	share	Proportion	Amount	(import price)	Proportion	Amount	imports	share
	1,000 dollars	Share ¹	Percent	1,000 dollars	Perce	ent	1,000	dollars	Share ¹
France	1,206	0.004	60.3	728	0	-0.0	-0	1,934	0.004
Netherlands	1,579	.005	67.9	1,072	0	– .6	– 15	2,636	.006
Germany	2,338	.008	43.2	1,011	0	5	- 18	3,331	.008
Italy	185,773	.624	44.3	82,383	0	-3.9	-10,434	257,722	.586
United Kingdom	425	.001	70.6	300	0	1.8	13	738	.002
Switzerland	2,199	.007	62.9	1,384	0	- 5.5	- 198	3.385	.008
Portugal	15,606	.052	38.9	6.076	- 28.2	21.2	4.592	26,274	.060
Spain	21,433	.072	39.6	8,495	- 30.9	28.6	8,550	38,478	.088
Greece	41,999	.141	40.5	17,018	- 21.1	21.0	12,365	71,382	.162
Turkey	1,755	.006	33.6	590	0	- 4.0	- 94	2,251	.005
USSR	347	.001	38.8	135	0	.3	2	483	.001
Czechoslovakia	457	.002	40.2	184	0	- 4.4	- 28	612	.001
Hungary	1,610	.005	34.2	551	Ô	2.6	56	2,216	.005
Bulgaria	3,792	.013	41.1	1,560	Ö	- 3.8	- 203	5,149	.012
Morocco	6,527	.022	41.8	2,731	0	- 4.9	- 458	8,800	.020
South Africa	606	.002	35.5	215	0	- 1.4	- 11	810	.002
United States	347	.001	48.6	168	0	- 2.4	- 12	503	.001
Israel	6.780	.023	37.4	2,538	0	- 4.3	- 399	8.918	.020
China	1,455	.055	45.2	658	Ö	- 4.8	- 102	2,011	.005
Rest of world	1,444	.005	37.6	543	0	- 3.7	- 74	1,912	.004
Total	297,676	1.000	43.1	128,338	2	3.2	13,532	439,547	1.000

¹Share based on 1.0.

²Not applicable.

¹Share based on 1.0.

²Not applicable.

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Appendix A: Base-Year Values and Trade Share Matrices

The tables in this appendix show base-year (1977) trade matrices in value terms employed in all the aggregate

projections as well as in the base-year matrices of export and import shares for all five fruit and vegetable product categories used in the aggregate models.

See glossary on p. ii for a key to the abbreviations used in the appendix tables.

Appendix table 1—Base-year (1977) trade pattern for fresh fruits

Exporting		Importing region											
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	Total exports			
		1,000 dollars (1977)											
EC OWE SGP	1,394,634 13,545 715,158	227,433 10,750 100,705	10,080 103 321	56,606 1,087 93,269	7,455 20 1,951	4,067 1 611	1,595 9 3,721	19,394 278 6,433	37,022 272 8,894	1,758,266 26,065 931,063			
EEU USA CNJP	59,981 200,180 1,911	22,268 50,078 1,322	8,218 0	57,264 23,774 24	0 0 23,503	13 426,346 12,840	633 19,757 559	21 1,458 5	1,044 110,876 8,101	141,224 840,687 48,265			
OEX NAME RSW	388,397 575,027 835,706	88,264 134,759 120,415	535 483 14,418	5,982 128,096 100,815	100,106 42,426 467,827	23,104 11,484 330,836	143,325 2,650 49,302	592 36,409 39,438	30,503 48,661 220,385	780,708 980,595 2,179,142			
Total import	s 4,184,539	755,994	34,158	467,517	643,288	809,202	221,551	104,028	465,758	7,686,015			

Appendix table 2—Base-year (1977) trade pattern for dried fruits

Exporting				Imp	orting reg	ion				Total
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports
					1,000 dol	lars (1977)				
EC OWE SGP	20,415 387 74,782	12,504 244 4,859	980 2 337	162 129 49,880	780 3 7,697	361 1 4,299	259 32 1,802	692 1 941	3,059 7 1,425	39,212 806 146,022
EEU USA CNJP	6,458 51,474 205	2,762 28,120 0	1,910 15	9,867 779 0	153 0 953	214 37,943 3	5,276 3	4 473 3	712 13,333 207	20,179 139,308 1,389
OEX NAME RSW	19,894 122,174 19,000	3,753 12,990 2,092	719 1,902 607	28 10,512 4,358	1,757 16,883 9,011	16,704 8,016 5,969	20,117 3,096 2,772	102 3,612 1,211	2,956 6,644 25,460	66,030 185,829 70,480
Total imports	314,789	67,324	6,476	75,715	37,237	73,510	33,362	7,039	53,803	669,255

Appendix table 3—Base-year (1977) trade pattern for processed fruits

Exporting				Imp	orting reg	ion				Total
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports
					1,000 dol	lars (1977)				
EC OWE SGP	558,077 128,368 160,623	52,525 31,255 8,128	4,301 212 1,080	1,946 1,897 20,801	10,139 3,793 3,167	12,317 568 1,998	6,163 237 727	2,519 182 1,090	29,142 5,878 27,865	677,129 72,410 225,479
EEU USA CNJP	110,645 79,774 20,397	41,520 29,868 1,549	104 2,167 2	14,068 95 2	5,223 0 31,424	5,057 144,718 2,623	672 5,313 3,563	,143 2,949 2,486	4,388 49,438 23,130	182,820 314,322 85,176
OEX NAME RSW	231,641 113,572 137,586	62,150 8,491 14,865	14,772 600 9,284	3,175 4,478 13,900	115,144 6,824 113,630	49,232 1,826 58,537	12,302 814 10,691	7,786 1,059 4,925	24,148 7,579 89,428	520,350 145,243 452,846
Total imports	1,440,703	250,351	32,522	60,362	289,344	276,876	40,482	24,139	260,996	2,675,775

Appendix table 4—Base-year (1977) trade pattern for fresh vegetables

				•				_		
Exporting				Imp	orting reg	ion				Total
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports
					1,000 dol	lars (1977)				
EC OWE SGP	1,638,886 29,379 426,301	212,495 6,694 59,351	61,539 2,462 6,110	31,963 107 1,900	16,243 35 4,460	16,115 8 9,138	12,448 2,886 13,579	50,750 1,047 1,419	74,151 166 6,386	2,114,590 42,784 528,644
EEU USA CNJP	110,568 107,866 51,494	49,632 12,932 643	526 8,918 2,797	53,810 4,787 158	2,290 0 27,706	6,462 264,996 2,161	303 15,184 2,828	1,379 20,371 5,859	10,029 57,317 26,285	231,999 492,371 120,131
OEX NAME RSW	89,021 332,247 567,123	5,038 15,961 8,753	30,173 9,144 6,847	3,163 33,777 15,212	23,964 3,258 30,617	40,461 1,037 200,020	86,288 898 20,582	7,075 14,516 13,069	20,746 26,702 209,447	510,929 437,540 1,071,670
Total imports	3,352,685	371,699	128,516	144,877	319,573	540,398	154,996	115,485	431,229	5,550,658

Appendix table 5—Base-year (1977) trade in processed vegetables

Exporting				Imp	orting reg	ion				Total
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports
					1,000 dol	lars (1977)				
EC OWE SGP	644,544 5,816 196,623	38,889 2,896 17,950	3,878 811 411	1,050 391 28,856	16,988 3,718 93,877	11,263 1,050 24,623	4,300 270 18,360	6,644 155 4,031	76,927 1,366 62,158	804,493 16,473 446,889
EEU USA CNJP	54,491 70,081 12,858	10,065 10,308 459	736 4,035 721	17,649 247 53	345 0 12,173	1,734 51,129 1,089	627 4,049 2,038	410 707 416	8,839 23,554 35,221	94,896 164,110 65,928
OEX NAME RSW	7,889 82,528 166,908	4,566 4,827 44,705	219 545 671	44 1,503 10,629	20,741 4,900 123,853	3,746 4,792 123,020	26,290 390 15,222	117 2,637 2,555	13,244 5,852 91,165	76,856 107,174 579,728
Total imports	1,241,748	134,665	12,027	60,422	276,595	222,446	72,446	17,672	318,526	2,356,547

Appendix table 6—Base-year (1977) export shares for fresh fruits

Exporting				Imp	orting reg	ion			usadris ustado	Total
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports ¹
					Per	cent				
EC OWE SGP	79.4 52.0 76.3	12.9 41.2 10.8	0.6 .4 0	3.2 4.2 10.0	0.4 .1 .2	0.2 0 .1	0.1 0 .4	1.1 1.1 .9	2.1 1.0 1.0	100.0 100.0 100.0
EEU USA CNJP	42.5 23.8 4.0	15.8 6.0 2.7	0 1.0 0	40.5 2.8 0	0 0 48.7	0 50.7 26.6	.4 2.4 1.2	0 .2 .1	.8 13.2 16.8	100.0 100.0 100.0
OEX NAME RSW	49.7 58.6 38.4	11.3 13.7 5.5	.1 0 .7	.8 13.1 4.6	12.8 4.3 21.5	2.9 1.2 15.2	18.4 .3 2.3	.1 3.7 1.8	5.0 10.1	100.0 100.0 100.0

¹May not total to 100 because of rounding.

Appendix table 7—Base-year (1977) export shares for dried fruits

										,
Exporting				Imp	orting reg	ion				Total
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports ¹
					Per	cent				
EC OWE SGP	52.1 48.0 51.2	31.9 30.3 3.3	2.5 .2 .2	0.4 16.0 34.2	2.0 .4 5.3	0.9 .1 2.9	0.7 4.0 1.2	1.8 .1 .6	7.8 .9 1.0	100.0 100.0 100.0
EEU USA CNJP	32.0 36.9 14.8	13.7 20.2 0	0 1.4 1.1	48.9 .6 68.6	.8 0 .2	1.1 27.2 .2	0 3.8 .2	3.5 .3 14.9	9.6	100.0 100.0 100.0
OEX NAME RSW	30.1 65.7 27.0	5.7 7.0 3.0	1.1 1.0 .9	0 5.7 6.2	2.7 9.1 12.8	25.3 4.3 8.5	30.5 1.7 3.9	.2 1.9 1.7	4.5 3.6 36.1	100.0 100.0 100.0

¹May not total to 100 because of rounding.

Appendix table 8—Base-year (1977) export shares for processed fruits

Exporting				Imp	orting reg	ion				Total
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports ¹
					Per	cent				
EC	82.4	7.8	0.6	0.3	1.5	1.8	0.9	0.4	4.3	100.0
OWE	39.2	43.2	.3	2.6	5.2	.8	.3	.3	8.1	100.0
SGP	71.2	3.6	.5	9.2	1.4	.9	.3	.5	12.4	100.0
EEU	60.5	22.7	.1	7.7	2.9	2.8	.4	.6	2.4	100.0
USA	25.4	9.5	.7	0	0	46.0	1.7	.9	15.7	100.0
CNJP	23.9	1.8	0	0	6.9	3.1	4.2	2.9	27.2	100.0
OEX	44.5	11.9	2.8	.6	22.1	9.5	2.4	1.5	4.6	100.0
NAME	78.2	5.8	.4	3.1	4.7	1.3	.6	.7	5.2	100.0
RSW	30.4	3.3	2.1	3.1	25.1	12.9	2.4	1.1	19.7	100.0

¹May not total to 100 because of rounding.

Appendix table 9—Base-year (1977) export shares for fresh vegetables

Exporting				Imp	orting reg	ion				Total
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports ¹
					Per	cent				
EC OWE SGP	77.5 68.7 80.6	10.0 15.6 11.2	2.9 5.8 1.2	1.5 .3 .4	0.8 .1 .8	0.8 .0 1.7	0.6 6.7 2.6	2.4 2.4 .3	3.5 .4 1.2	100.0 100.0 100.0
EEU USA CNJP	47.1 21.9 42.9	21.1 2.6 .7	.2 1.8 2.3	22.9 1.0 .1	1.0 0 23.1	2.7 53.8 1.8	.1 3.1 2.4	.6 4.1 4.9	4.3 11.6	100.0 100.0 100.0
OEX NAME RSW	17.2 75.9 52.9	1.0 3.6 .8	5.8 2.1 .6	.6 7.7 1.4	45.5 .7 2.9	7.8 .2 18.7	16.7 3.3 1.9	1.4 6.1 1.2	4.0 19.5	100.0 100.0 100.0

¹May not total to 100 because of rounding.

Appendix table 10—Base-year (1977) export shares for processed vegetables

			-		•			•		
Exporting				lmp	orting reg	ion				Total
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports ¹
					Per	cent				
EC OWE SGP	80.1 35.3 44.0	4.8 17.6 4.0	0.5 4.9 .1	0.1 2.4 6.5	2.1 22.6 21.0	1.4 6.4 5.5	0.5 1.6 4.1	0.8 .9 .9	9.6 6.3 13.9	100.00 100.00 100.00
EEU USA CNJP	57.4 42.7 19.5	10.6 6.3 .7	.8 2.5 1.1	18.6 .2 .1	.4 0 1.7	1.8 31.2 4.5	.7 2.5 .6	.4 .4 53.4	9.3 14.4	100.00 100.00 100.00
OEX NAME RSW	10.3 77.0 28.8	5.9 4.5 7.7	.3 .5 .1	.1 1.4 1.8	27.0 4.6 21.4	4.9 4.5 21.2	34.2 .4 2.6	.2 2.5 .5	17.2 4.7 15.9	100.00 100.00 100.00

¹May not total to 100 because of rounding.

Appendix table 11—Base-year (1977) import shares for fresh fruits

Exporting				Imp	orting region	on			
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW
					Percent				
EC OWE SGP	33.3 .3 17.1	30.1 1.4 13.3	29.5 .3 .9	12.1 .2 19.9	1.2 0 .3	0.5 0 .1	0.7 0 1.7	18.6 .3 6.2	8.0 .1 1.9
EEU USA CNJP	1.4 4.8 0	2.9 6.6 .2	0 24.1 0	12.2 5.1 0	0 0 3.7	0 52.7 1.6	.3 8.9 .3	0 1.4 0	.2 123.8 1.7
OEX NAME RSW	9.3 13.7 20.0	11.7 17.8 15.9	1.6 1.4 42.2	1.3 27.5 21.6	15.6 6.6 72.7	2.8 1.4 40.9	64.7 1.2 22.3	.6 35.0 37.9	6.5 10.4 47.3
Total imports ¹	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹May not total to 100 because of rounding.

Appendix table 12—Base-year (1977) import shares for dried fruits

Exporting				Imi	orting regi	on			
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW
					Percent				
EC OWE SGP	6.4 .1 23.8	18.6 .4 7.2	15.1 0 5.2	0.2 .2 65.9	2.0 0 20.7	0.5 0 5.8	0.8 .1 5.4	9.8 0 13.4	5.7 0 2.6
EEU USA CNJP	2.1 16.4 .1	4.1 41.8 0	.1 29.5 .2	13.0 1.0 0	.4 0 2.6	.3 51.6 0	0 15.8 0	1.3 6.7 0	24.8 .4
OEX NAME RSW	6.3 38.8 6.0	5.6 19.3 3.1	11.1 29.4 9.4	0 13.9 5.8	4.7 45.3 24.2	22.7 10.9 8.1	60.3 9.3 8.3	1.4 51.3 17.2	5.5 12.3 47.3
Total imports ¹	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹May not total to 100 because of rounding.

Appendix table 13—Base-year (1977) import shares for processed fruits

Exporting				Im	porting regi	on			
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW
					Percent				
EC OWE SGP	38.7 2.0 11.1	21.0 12.5 3.2	13.2 .7 3.3	3.2 3.1 34.5	3.5 1.3 1.1	4.4 .2 .7	15.2 .6 1.8	10.4 .8 4.5	11.2 2.3 10.7
EEU USA CNJP	7.7 5.5 1.4	16.6 11.9 24.8	.3 6.7 0	23.3 .2 0	1.8 0 10.9	1.8 52.3 .9	1.7 13.1 8.8	4.7 12.2 10.3	1.7 18.9 8.9
OEX NAME RSW	16.1 7.9 9.5	24.8 3.4 5.9	45.4 1.8 28.5	5.3 7.4 23.0	39.8 2.4 39.3	17.8 .7 21.1	30.4 2.0 26.4	32.3 4.4 20.4	9.3 2.9 34.3
Total imports ¹	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹May not total to 100 because of rounding.

Appendix table 14—Base-year (1977) import shares for fresh vegetables

							_						
Exporting	Importing region												
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW				
					Percent								
EC OWE SGP	48.9 .9 12.7	59.2 1.8 15.9	47.9 1.9 4.8	22.1 .1 1.3	5.1 0 1.4	2.9 0 1.7	8.0 1.7 8.8	43.9 .9 1.2	17.2 0 1.5				
EEU USA CNJP	3.3 3.2 1.5	13.4 3.5 .2	.4 6.9 2.2	37.1 3.3 .1	.7 0 8.7	1.2 49.0 .4	.2 9.8 1.8	1.2 17.6 5.1	2.3 13.3 6.1				
OEX NAME RSW	2.7 9.9 16.9	1.4 4.3 2.4	23.5 7.1 5.3	2.2 23.3 10.5	13.5 1.0 9.6	7.5 .2 37.0	55.7 .6 13.3	6.1 12.6 11.3	4.8 6.2 48.6				
Total imports ¹	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0				

¹May not total to 100 because of rounding.

Appendix table	15—Base-year (1977)	import shares f	or processed vegetables
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Exporting	Importing region											
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW			
					Percent							
EC OWE SGP	51.9 .5 15.8	28.9 2.2 13.3	32.2 6.7 3.4	1.7 .6 47.8	6.1 1.3 33.9	5.1 .5 11.1	5.9 .4 25.3	37.6 .9 22.8	24.2 .4 19.5			
EEU USA CNJP	4.4 5.6 1.0	7.5 7.7 .3	6.1 33.5 6.0	29.2 .4 .1	.1 0 4.4	.8 22.0 .5	.7 5.6 4.1	2.3 4.0 2.4	2.8 7.4 11.1			
OEX NAME RSW	.6 6.6 13.4	3.4 3.6 33.2	1.8 4.5 5.6	.1 2.5 17.6	7.5 1.8 44.8	1.7 2.2 55.3	36.3 .5 21.0	.7 14.9 14.5	4.2 1.6 28.9			
Total imports ¹	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			

¹May not total to 100 because of rounding.

Appendix B: Projected 1986 Changes in Trade Patterns

The tables in this appendix show the changes from base-year trade patterns of all fruit and vegetable categories that are projected to occur in 1986 because of trends in incomes and export supply growth, as well as the static changes in 1986 projected to occur because of

the tariff effects of enlargement. All these changes are from the base-year projections. One can calculate the final projected trade flows in 1986 by adding the base-year trade flows (exhibited in appendix tables 1-5) to the two matrices of changes shown here.

See glossary on p. ii for a key to the abbreviations used in the appendix tables.

Appendix table 16—Base-projections of fresh fruits for 1986: Changes in trade flows from base (1977) due only to income and export supply changes

Exporting				Imp	orting regi	on				World
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports
					1,000 doll	ars (1977)				
EC OWE SGP	268,601 660 121,743	72,070 - 3,598 20,136	11,531 39 326	20,525 351 33,263	4,357 5 1,040	2,642 0 354	1,309 1 1,627	12,397 73 3,721	26,010 101 5,781	419,437 - 2,367 188,987
EEU USA CNJP	19,640 27,187 - 73	25,469 1,566 – 811	6,771 0	22,753 8,258 7	0 0 1,872	14 201,144 - 276	1,003 10,601 - 104	21 709 0	1,074 63,179 1,479	69,975 319,415 2,095
OEX NAME RSW	37,582 150,368 195,351	- 12,674 96,134 65,884	331 755 20,052	2,014 48,980 37,645	36,817 31,631 318,189	8,146 10,052 259,071	50,824 3,168 51,305	227 30,262 29,698	14,648 42,207 176,426	137,916 413,555 1,153,619
World imports	821,055	264,177	39,805	173,796	393,912	481,146	120,734	77,110	330,906	2,702,632

Appendix table 17—Base projections of dried fruits for 1986: Changes in trade flows from base (1977) due only to income and export supply changes

Exporting		Importing region									
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	World exports	
					1,000 dol	lars (1977)					
EC OWE SGP	8,098 133 4,404	16,125 524 508	1,469 0 129	48 14 11,918	671 3 2,834	416 1 1,884	440 1 752	741 0 391	3,022 7 629	31,030 684 22,432	
EEU USA CNJP	862 4,375 32	627 1,798 0	2 879 10	2,511 192 0	70 0 469	121 17,553 2	2,883 2	2 231 2	411 6,696 126	4,612 34,607 643	
OEX NAME RSW	- 626 18,834 4,846	- 1,061 3,892 1,426	91 1,281 609	6 2,713 1,198	374 8,282 5,797	3,714 4,891 4,960	3,611 2,421 3,180	28 2,218 971	956 4,048 19,507	7,093 48,579 42,494	
World imports	40,957	22,824	4,470	18,600	18,502	33,541	13,295	4,585	35,402	192,175	

Appendix table 18—Base projections of processed fruits for 1986: Changes in trade flows from base (1977) due only to income and export supply changes

Exporting				Imp	orting regi	on				World
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports
					1,000 doll	lars (1977)				
EC OWE SGP	383,348 30,181 129,517	7,289 37,182 3,560	1,430 244 621	747 818 8,310	6,272 4,020 2,399	9,125 901 1,879	3,395 358 608	1,647 215 891	22,236 7,154 25,252	435,487 81,071 173,037
EEU USA CNJP	36,895 36,241 6,678	- 22,718 - 10,367 - 861	- 30 - 201 - 1	4,701 33 1	1,130 0 6,585	935 53,357 461	- 117 278 - 366	215 1,014 10	1,515 24,076 3,809	22,525 104,431 16,315
OEX NAME RSW	271,217 69,523 97,439	96,071 - 269 2,820	20,829 113 3,477	1,408 1,675 5,377	136,798 3,633 73,093	77,748 1,130 45,424	22,377 311 6,419	10,384 586 3,364	35,562 5,107 70,512	669,392 81,810 307,924
World imports	1,061,034	112,708	26,483	23,070	233,929	190,959	33,263	18,325	19,222	1,891,992

Note: Figures may not add up because of rounding.

Appendix table 19—Base projections of fresh vegetables for 1986: Changes in trade flows from base (1977) due only to income and export supply changes

		,	,	,		•		•					
Exporting		Importing region											
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports			
					1,000 dol	lars (1977)							
EC OWE SGP	812,734 7,236 204,905	83,220 - 1,839 20,481	17,155 - 166 1,475	8,737 25 515	7,754 6 2,045	6,281 0 3,336	4,797 - 477 4,731	31,904 268 859	37,500 34 3,100	1,100,075 4,588 241,457			
EEU USA CNJP	27,682 50,128 17,908	- 13,175 3,844 - 24	- 138 1,808 - 179	12,734 1,287 40	408 0 8,192	58 89,956 336	- 48 4,711 125	361 11,838 2,374	2,098 26,804 8,565	29,981 190,375 37,337			
OEX NAME RSW	50,371 128,700 564,473	3,095 1,223 20,114	13,775 211 12,003	896 8,700 5,154	132,567 1,120 34,002	20,410 225 251,962	48,320 118 37,157	5,209 6,740 18,600	12,272 9,978 23,565	286,916 157,015 1,180,028			
World import	s 1,864,134	116,940	45,445	38,087	186,093	372,563	99,434	78,153	336,926	3,137,772			

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Appendix table 20—Base projections of processed vegetables for 1986: Changes in trade flows from base (1977) due only to income and export supply changes

Exporting				Imp	orting regi	on	-		I	World
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports
					1,000 doll	ars (1977)				
EC OWE SGP	514,368 3,739 176,541	20,734 631 13,480	1,574 145 229	368 131 10,374	11,181 1,947 69,886	9,383 672 23,612	2,998 115 16,165	4,683 85 3,253	62,598 921 56,133	627,882 8,385 369,672
EEU USA CNJP	72,325 46,822 1,675	18,213 2,755 - 272	931 869 - 335	7,007 83 15	384 0 914	2,620 34,305 26	1,085 1,894 - 1,033	512 405 13	11,346 16,416 7,221	114,423 103,548 8,223
OEX NAME RSW	7,223 102,020 42,587	3,611 7,577 - 19,267	128 604 – 218	16 585 3,110	15,757 5,074 22,930	3,676 6,673 20,909	24,018 602 - 2,775	97 3,045 397	12,169 6,079 29,556	66,695 132,259 97,230
World imports	967,294	47,462	3,928	21,688	128,073	101,874	43,070	12,490	202,439	1,528,317

Appendix table 21—Base projections of fresh fruits for 1986: Changes in trade flows from trade patterns that arose only from income supply effect¹

Exporting				Impo	orting region	on				World
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports
					1,000 doll	ars (1977)				
EC OWE SGP	- 35,224 - 313 129,910	7,744 154 - 18,482	11,730 - 61 260	- 113 - 2 - 1,278	68 0 - 186	51 0 - 81	31 0 821	238 2 - 725	344 1 - 895	- 15,132 - 219 107,702
EEU USA CNJP	- 1,845 - 5,480 - 45	758 578 5	0 - 6,552 0	- 155 - 69 0	0 0 - 18	0 2 - 15	5 - 25 - 1	0 2 0	4 0 - 8	- 1,234 - 11,545 - 83
OEX NAME RSW	- 9,627 - 16,232 - 23,108	1,415 4,581 3,664	- 373 - 533 - 14,836	- 14 - 311 - 243	415 256 2,664	121 96 2,570	982 35 583	4 323 330	126 292 1,251	- 6,952 - 11,493 - 27,125
World imports	38,034	417	- 10,364	- 2,187	3,198	2,743	788	175	1,115	33,919

Note: Figures may not add up because of rounding.

Appendix table 22—Base projections of dried fruits for 1986: Changes in trade flows from trade patterns that arose only from income supply effect¹

		trado p	atterns ti	141 41050	omy 1101		ouppiy c			
Exporting				Impo	orting regi	on				World
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports
					1,000 dol	lars (1977)				
EC OWE SGP	- 1,334 - 24 18,339	178 10 - 1,010	710 0 95	- 2 0 - 873	6 0 550	2 0 - 467	1 0 - 271	2 0 - 79	2 0 - 104	- 434 - 14 15,080
EEU USA CNJP	- 316 - 2,595 - 11	62 218 0	- 4 - 1,714 - 15	- 85 - 7 0	2 0 8	3 192 0	0 19 0	0 2 0	5 14 1	- 333 - 3,872 - 17
OEX NAME RSW	- 845 - 5,327 - 1,049	43 606 55	- 492 - 1,887 - 739	0 - 80 - 39	18 401 119	163 238 85	217 138 52	1 87 13	15 123 171	- 881 - 5,699 - 1,332
World imports	6,838	161	- 4,046	- 1,086	5	217	156	26	227	2,498

¹These changes are due only to the tariff effects of enlargement.

¹These changes are due only to the tariff effects of enlargement.

Appendix table 23—Base projections of processed fruits for 1986: Changes in trade flows from trade patterns that arose only from income supply effects

Exporting	Importing region										
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	World	
					1,000 doll	lars (1977)					
EC OWE SGP	- 11,481 - 806 60,434	465 203 - 2,546	1,683 - 166 212	- 15 16 - 483	52 10 - 468	95 3 - 442	49 1 - 232	21 1 - 190	409 80 - 4,098	- 8,721 - 688 52,188	
EEU USA CNJP	- 1,763 - 1,769 - 389	- 161 - 31 1	- 27 - 722 1	- 103 - 1 0	22 0 22	29 - 100 3	- 13 0	7 3 0	49 325 82	- 1,622 - 2,308 283	
OEX NAME RSW	- 5,273 - 2,067 - 2,933	2,062 87 122	- 12,686 - 255 - 4,606	- 24 - 33 - 107	1,314 45 531	911 17 412	324 8 76	135 10 39	564 114 1,221	- 12,674 - 2,074 - 5,245	
World imports	33,953	523	- 16,567	- 783	1,529	929	216	27	- 2,254	18,574	

Appendix table 24—Base projections of fresh vegetables to 1986: Changes in trade flows from trade patterns that arose only from income and supply effects¹

		-			-					
Exporting				Imp	orting regi	on				World
region	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports
					1,000 doll	ars (1977)				
EC OWE SGP	- 32,707 - 114 143,593	10,221 328 - 17,372	25,663 - 1,210 848	18 0 - 29	- 108 0 - 663	- 61 0 - 1,693	- 60 55 - 3,732	- 173 17 - 262	- 239 2 - 924	- 2,555 - 921 119,766
EEU USA CNJP	- 1,659 - 1,759 - 493	1,418 699 45	- 271 - 7,460 - 1,792	43 5 0	-8 0 118	- 3 375 20	0 44 37	0 35 57	- 6 46 190	- 486 - 8,015 - 1,817
OEX NAME RSW	- 123 - 2,910 - 10,173	608 984 1,403	- 29,330 - 6,383 - 13,000	10 66 23	4,065 19 61	1,127 12 2,128	3,835 15 444	196 172 133	430 235 1,409	- 19,181 - 7,791 - 17,571
World imports	93,655	- 1,665	- 32,935	135	3,485	1,905	639	174	1,144	66,538

Note: Figures may not add up because of rounding.

Appendix table 25—Base projections of processed vegetables for 1986: Changes in trade flows from trade patterns that arose only from income and supply effects¹

Exporting region	Importing region									World
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	exports
	1,000 dollars (1977)									
EC OWE SGP	- 21,151 - 166 104,528	1,901 120 - 4,418	1,162 - 420 54	- 9 - 3 - 571	400 85 - 8,588	283 25 - 3,702	276 15 - 3,422	175 4 - 450	1,700 30 -6,255	- 15,262 - 311 77,176
EEU USA CNJP	- 2,424 - 2,720 - 363	844 262 3	- 737 - 2,204 - 175	- 152 - 2 0	10 0 105	55 639 6	62 169 48	13 11 4	230 308 262	- 2,099 - 3,537 - 111
OEX NAME RSW	- 437 - 3,297 - 5,104	55 407 444	- 160 - 506 - 205	0 - 13 - 93	164 145 1,266	4 162 881	901 38 329	1 90 27	69 139 820	596 - 2,833 - 1,636
World imports	68,865	- 383	-3,190	- 844	-6,414	- 1,647	1,583	- 125	- 2,697	51,983

¹These changes are due only to the tariff effects of enlargement.

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